



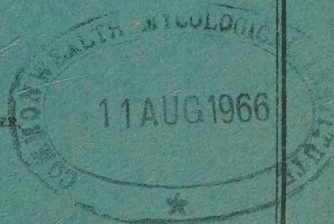
COLONY OF MAURITIUS

Annual Report
OF THE
Department of Agriculture
for the year 1964

[PRICE : Rs 3.50]

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J. ELIEL FÉLIX, I.S.O., GOVERNMENT PRINTER
PORT LOUIS, MAURITIUS
OCTOBER 1965



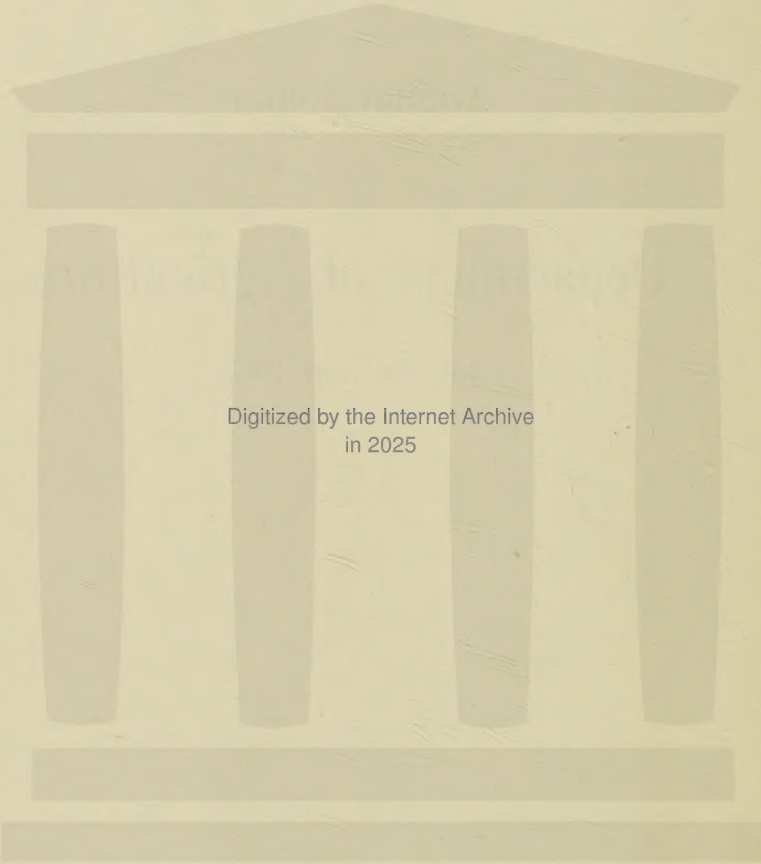
No. 29 of 1965



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Annual Report of the Department of Agriculture for the year 1964

I. General Review

During 1964, there was no important change in the policy of the Department of Agriculture other than in the breeding policy for milch cattle. It continued to centre round the maximum utilisation of the land and water resources of Mauritius and its dependencies. With a view to increasing the limited amount of water available for irrigation as well as increasing the efficiency of land utilisation, an application was submitted to the United Nations Special Fund for a survey of the land and water resources of Mauritius; this was approved in June and, by the end of the year, the Project Manager had assumed duty. Owing to the limited resources of land suitable for agriculture, the majority of which is already under cultivation, emphasis was placed on increasing the productivity of land under cultivation as well as on the utilisation of the relatively small reserves of undeveloped land. The development of the livestock industry received considerable attention, particularly the production and marketing of milk, meat and poultry. An Agricultural Marketing Board was set up in May and immediately concerned itself with the marketing of locally produced potatoes and onions.

2. In general, weather conditions were not conducive to sugar production and that of other crops. Cyclone *Danielle* passed to the west of the island in January with wind gusts of 135 m.p.h. This was followed by cyclone *Gisele* some 4 weeks later which, although not as intense as *Danielle*, caused damage to recovering crops. Rainfall and temperatures were below normal in the first half of the year which, together with the cyclones mentioned as well as others in the vicinity, contributed towards the production of a mediocre sugar crop of 519,900 metric tons compared with 685,500 metric tons in 1963. The cool weather continued through to November which, coupled with abnormal weather earlier in the year, adversely affected the production of tea which fell by 186,358 lbs from the record of 3,256,891 lbs produced in the previous year to 3,070,533 lbs, in spite of an increased acreage under tea. Weather conditions were favourable for the production of Virginian and Amarello tobaccos but less favourable for the production of Burley. The yield of leaf and the financial returns of growers of Virginian and Amarello tobaccos were similar to those obtained in 1963. Foodcrop and vegetable production was slightly lower than in the previous year save for Irish potatoes and groundnuts, the former rising by about 25 per cent to just under 6,000 metric tons and the latter by about 10 per cent to just over 500 metric tons. There was an increase in the importation of herd cattle from Madagascar for slaughter, 7,282 being imported compared with 5,185 in 1963. There was an increase in egg and poultry meat production but production still fell short of requirements.

3. The Department was organised into 13 divisions consisting of 322 officers including a Director and two Deputy Directors who plan and carry out the experimental, development and extension work of the organisation. There were 26 vacancies at the close of the year. Assistance was received from the Food and Agriculture Organisation of the United Nations who provided a Rural Institutions Officer and a Marketing Adviser to assist in the in-service training of extension staff and in the setting up and organisation of an agricultural marketing board respectively. The Canadian Government also generously made available the services of a Fisheries Adviser to assist in the development of the fisheries of Mauritius and its dependencies.

4. The work of the Department is broadly divided into:

- (a) applied research and development, to study and develop crops and livestock in the various environmental conditions obtaining in Mauritius;
- (b) extension, to advise and assist farmers with a view to their obtaining the maximum productivity and economic returns from their farms.

5. The development of agricultural industries other than sugar and the provision of extension services to both small sugar-cane planters and others as well as livestock producers continued to be the main concern of the department. Encouragement and assistance were given in the production of tea, tobacco, pasture and forage crops, orchard crops, particularly citrus and coconuts, foodcrops and vegetables, livestock and livestock products. The "Produce More Food" campaign was continued in 20 villages and an *ad hoc* committee was set up by the Honourable, the Minister of Agriculture and Natural Resources with a view to increasing foodcrop production on sugar estates by the production of potatoes, maize, groundnuts, beans, tomatoes and other vegetables on cane fallows and cane interlines where the land was suitable for these crops.

6. The majority of the technical officers in the department received their initial training in agriculture from the College of Agriculture, which functions as a division of the department. Professional and specialist staff generally complete their training overseas. The College also provides technical staff to the sugar industry, other agricultural industries and the Mauritius Sugar Industry Research Institute. The College continued to offer two 3-year courses leading to diplomas in Agriculture and Sugar Technology. 93 candidates applied for admission to the diploma courses, of whom 76 sat for the entrance examination; of these 9 were admitted to the Agriculture course and 7 to Sugar Technology. During 1964, there were 75 students in residence, of whom 48 were taking the diploma courses. 10 students were awarded the diploma in Agriculture and 4 were awarded the diploma in Sugar Technology. One student taking the Agriculture course obtained an honours diploma and was awarded a laureateship. As the result of the absence of a suitable candidate for a laureateship in Sugar Technology course, a second scholarship was awarded to the runner-up in the Agriculture course. Under the auspices of the Comité de Collaboration Agricole Maurice—Réunion—Madagascar, a party of 6 third-year students, accompanied by the acting Lecturer in

Agriculture and the Assistant Lecturer in Sugar Technology, visited Réunion in July and a return visit to Mauritius was paid by Réunion students and staff in August. In December for the first time, a party of 6 students from the College Rural d'Ambatebe in Madagascar visited Mauritius for one week. During the year a number of distinguished visitors from overseas visited the college in connection with the setting up of a University College in Mauritius, following the recommendations made by Professor C. T. Leys of Makerere College, University of East Africa.

7. The Department continued to maintain the essential services which it provides for the sugar industry, namely the Sugar Millers and Planters Central Arbitration and Control Board, which regulates the sale and purchase of canes, and the extension service to small cane farmers below 100 arpents. Some 19,936 tests were carried out by the Central Board on planters and estates canes. 19 protests were received in respect of the provisional assessment of sugar for the 1963 crop; of these 6 withdrew their protests and the remainder were settled. Cost of production questionnaires were issued to 70 planters and to 23 sugar estates with factories and a schedule of rates of transport costs for sugar-cane was issued. 16 applications for alterations in the delimitation of factory areas were received but all were rejected. Permits were issued to 54 middlemen; 42 complaints were received and the permits of 3 middlemen were cancelled. 2,750 cane contracts were registered; 15,023 cane contracts were in force covering some 24,000 planters. The number of planters, who failed to enter into contract before the 30th of June, fell from 361 in 1963 to 148 in 1964. 8 cases of the breach of Sale of Canes (Control) Ordinance were reported. 118 weighbridges were in operation, a reduction of 2 compared with the previous year, and regular checks were made of weighbridges for accuracy as well as 375 surprise checks.

8. The total acreage under cane was 205,000 arpents of which 194,870 arpents were harvested, compared with 204,200 and 194,080 arpents respectively in 1963. 519,900 metric tons of sugar were produced compared with 685,500 in 1963. 566,593 long tons were exported, of which 368,500 long tons were sold under the Commonwealth Sugar Agreement at the negotiated price of £46.0.10d per ton, the remaining 198,093 long tons being sold on the free market. 4 varieties of sugar-cane, namely M.147/44, E.1/37, B.37172 and M.93/48 accounted for about 66 per cent of the acreage under sugar-cane; the remaining 34 per cent comprised the varieties M.202/46, M.134/32, B.3337, M.31/45 and M.253/48. 113,910 metric tons of molasses were produced, of which 8,000 metric tons were utilised in the manufacture of rum and various alcoholic products. 96,830 metric tons were exported inclusive of molasses carried over from the 1963 crop and the balance was used as fertilizer.

9. The Department continued to direct the activities of the three committees administering the Sugar Industry Rehabilitation Fund. The Sugar Planters Rehabilitation Fund continued to manage the Mechanical Pool which is designed to clear and de-stone land planted under sugar-cane and to operate the Pointe aux Sables Cane Nurseries as well as subsidiary nurseries in factory areas for the production of disease-free planting material. The expansion of the cane nurseries at Pointe aux Sables was completed during

the year and, when in full production, should be sufficient to supply the demands for disease-free planting materials both for planters in the vicinity of the nurseries and for the subsidiary nurseries in factory areas.

10. The tea industry is controlled by the Tea Control Board which held regular meetings throughout the year. The Board was mainly concerned with seeking alternative outlets for Mauritian tea, with the formation of an association of tea growers and manufacturers and investigations into the centralised marketing of tea for local consumption. The Board launched a "Drink More Tea" campaign with the co-operation of manufacturers by advertising on the radio as well as dispensing tea from a mobile tea canteen at public functions. The campaign is financed equally by the Tea Control Board and the tea manufacturers. Encouragement was given to all tea manufacturers to improve their standard of manufacture and in certain cases the Board made the issue of a manufacturer's licence conditional on factory improvements. Further consideration was given to the possibility of the Tea Control Board becoming the sole marketing agency for tea sold for local consumption; it was finally decided that the Agricultural Marketing Board which was created during the year, should be asked to undertake this service.

11. Of the 5,562 arpents planted to tea, approximately 3,080 arpents were mature plantations and 2,000 arpents were in partial bearing. There were 444 plantations varying in average size from 1.71 arpents to 232.6 arpents. Farms of less than 5 arpents comprised 11.8 percent of the total area under tea, 5-25 arpents, 4.4 percent, 25-100 arpents, 16.9 per cent and above 100 arpents, 66.9 per cent. The largest plantation under single management was 837 arpents; the second largest was 522 arpents. There were 70 farms of less than 1 arpent. Climatic conditions were generally unfavourable to leaf production, resulting in a production of 3,070,533 lbs of black tea made in 6 factories, a reduction of 186,538 lbs from the record production of 1963, despite an increasing acreage in production. Of this production, 1,725,178 lbs of a value of Rs 4,375,460 was exported, mainly to the United Kingdom. The price of Mauritius tea on the London market remained fairly steady; 14,271 chests were sold at an average price of 3s. 5.35d per lb compared with 3s 5.81d per lb in 1963. During the year, work commenced on the extension of the La Chartreuse tea factory with a view to raising its capacity from three-quarters of a million to one and a half million pounds of made tea per year; the extension of this factory will be completed in 1965. The major construction and development programme, which was commenced in 1963, at one tea factory was completed. Two other tea factories installed additional withering troughs and one of these installed new rolling room machinery comprising a Rotorvane, triturator, C.T.C. machinery and a new drier.

12. The tea development project, which was commenced in 1956, was designed to develop 3,000 arpents of new land under tea. As a result of representations from participating planters in 1963, the scheme was extended for a further two years to June 1965, owing to the setbacks suffered during the cyclones of 1960 and subsequent cyclones. Of the 3,000 arpents to be developed under this scheme 2,141 arpents were under tea by the close of the year. Of this total, 212 arpents had been planted on private land,

1,640 arpents on Crown Land by tea project planters and 289 arpents on Crown Land by Government. 138 arpents of the 289 arpents were subdivided in 1963 into 33 small holdings each of approximately 4 effective arpents under tea. In 1963, these small holdings were leased directly to farmers. During the course of 1964, the small holders experienced considerable difficulty in obtaining short term loans as a result of which it was decided, with the tenants' agreement, to cancel the individual leases and to release the area in one block to a co-operative society for sub-leasing to the individual tenants, thereby enabling the small holders to obtain short term loans from the Co-operative Central Bank.

13. Work proceeded satisfactorily on the new Tea Development Project which envisages the establishment and planting of a minimum of 500 arpents of tea per annum by Government for distribution, when fully established, as small holdings. In the latter half of the year, weather conditions favoured land clearing operations and, at the close of the year, 1,865 arpents had been contour-surveyed, 1,615 arpents cleared, 1,164 arpents prepared for planting and 836 arpents planted. The harvest from the tea seed gardens was seriously affected by cyclone *Danielle*, only 3,245 lbs were obtained. The main source of local tea seed continued to be the 10-acre Parc-aux-Cerfs garden; the new seed garden planted on Crown Land de Rauville with selected seed of a broad-leaf Assam type continued to make satisfactory progress. In consequence, 13,000 lbs of tea seed were imported from Nyasaland and 15,000 lbs from Tanganyika to meet the seed requirements of the project.

14. At the Wooton Tea Experiment Station, 239,700 lbs of green leaf were harvested, which was only slightly lower than in the previous crop year, in spite of unfavourable weather. Work was continued on the vegetative propagation of selected clones and the results obtained in a mist propagator was sufficiently promising to justify the construction, towards the end of the year, of an additional propagator, together with a hardening off shed. The greatest success in rooting cuttings was obtained during the period November to April. Pruning experiments indicated that it might be possible to even up the green leaf production curve; fertilizer trials indicated that split applications of fertilizer in October and January compared with the usual single application in October might result in increased yields.

15. The La Chartreuse Tea Marketing Co-operative Society continued to act as Government's managing agents in respect of the Chartreuse tea factory and Midlands tea estate. The members of this society comprise tea project planters farming Crown Land leased to them under the original Tea Development Project in the vicinity of the factory. The production of Chartreuse Factory was below expectation, partly because of loss of leaf following cyclone *Danielle* on both project planters holdings and Midlands tea estate, and partly because of an irresponsible strike and go-slow movement of field labour on Midlands tea estate during the height of the plucking season.

16. The control of the tobacco industry continued to be vested in the Tobacco Board which not only purchased, processed and stored all leaf produced but provided an extension service to the industry. Research services were provided by the Department of Agriculture at the Richelieu and Pamplemousses experiment stations, which organization was also responsible for

the production of seed of all approved varieties. The seed stocks held by the department were sufficient for two years' usings as an insurance against natural disasters. In addition, the Richelieu experiment station continued to sow tobacco in excess of its planting requirements to assist planters in case of nursery failure. Weather conditions were generally favourable for the production of flue-cured Virginian and air-cured Amarello tobaccos but were less favourable for the production of Burley, which suffered intermittently from drought. The yield of leaf and the financial return to growers of both Virginian and Amarello tobaccos were similar to those obtained in 1963. The pest and disease incidence was generally less than in previous years and the incidence of mosaic and a strain of the potato virus Y was also considerably reduced. The quality of both the Virginian and Amarello tobaccos produced and received in the warehouse was similar to that for 1963. Permits were issued for a smaller acreage, compared with 1963 and again no permits were issued for flue-cured Amarello tobacco. The reduction in acreage was due mainly to the excess production over the quota in the previous year, resulting in allocations for production having to be curtailed by a corresponding amount in accordance with the long standing policy of the Board. 325 tons of tobacco of all types were produced from 511 arpents, compared with 483 tons from 784 arpents in 1963. Usings of domestic leaf by both manufacturers amounted to 462½ tons compared with 457¾ tons in the previous year, while usings of imported leaf for manufacture increased by 2 per cent. Purchase prices remained unaltered and growers received the following average prices per kg:

			Rs c.
flue-cured Virginian	...	...	7 25
air-cured Amarello	...	...	2 60
Burley	...	...	2 58

17. The Mauritius Hemp Producers Syndicate continued to control the marketing of aloe fibre which was processed into sacks by the Sack Factory for use by the Sugar Industry and for shipment to Burma for the bagging of rice purchased from that country by Mauritius. 1,206 metric tons of aloe fibre were purchased by the factory, a decrease of 143 metric tons on the 1963 deliveries. 593,909 pure aloe sacks were produced, together with 832,912 sacks containing a mixture of aloe fibre and imported jute. In addition to the above two types of sacks, a further 30,950 sacks were produced together with 18,464 yards of filter press cloth, 4,073 yards of other fabrics, 16,458 kgs of yarns and 9,071 kgs of rope. The cost of production of these sacks was higher than the cost of imported jute sacks with the result that the sack factory operated at a loss amounting to approximately Rs 638,000 compared with a loss of Rs 569,951.91 in 1963. Prices of aloe fibre remained the same while those paid for jute cuttings were Rs 692.91, an increase of Rs 43.81 over the previous year. During the year, negotiations were completed with Burma for the shipment of 650,000 locally-produced bags for the bagging of rice to be purchased by Mauritius in 1965. This agreement enabled the surplus production of the factory to be disposed of. The price to be received for the sacks sold to Burma is to be that at which the Burmese will pay for sacks purchased by them for bagging their rice exports as a result of world tenders.

18. The selection within the Creole breed was carried out on a limited scale, pending the implementation of the change in the milch cattle breeding policy, which was finalised towards the end of the year. It is expected that Friesian semen will be available to cowkeepers through the Artificial Insemination Service early in 1965 to implement the milch cattle breeding policy which is to produce grade Friesian cows, thereby utilising the higher liquid milk production potential in the tropics of this type of animal. After a period of quarantine, the Friesian bulls imported last year from Australia were sent to Rodrigues and are being utilised in the breeding centres on that island. The production of selected breeds of herd cattle, pigs, goats, poultry and rabbits continued for sale to producers as well as for experimental purposes. The Boran cattle at Palmar continued to show promise and 2 bulls were sold to breeders. The 2 Boran bulls sent to Rodrigues last year have continued to thrive under controlled conditions on the cattlewalk of that island and the first calf crop shows considerable promise. The Brahmin bull, a descendant of an introduction made from the United States many years ago, has improved the beef potential of crossbred calves produced from Ongole cows. At the livestock breeding stations at Curepipe and Palmar, there were 284 head of the creole breed, 105 head of Ongoles and 59 head of Borans, together with one Brahmin bull. The Artificial Insemination Service for the dairy industry was maintained and some 18,773 inseminations were performed.

19. There was little demand for breeding stock of the Large White breed of pigs, two pedigree Large White boars were imported. At Palmar, there were 50 Anglo-Nubian and 6 British Alpine goats. 3 Anglo-Nubian bucks were sold to breeders and 6 were stationed at district headquarters of the Extension Services. During the year, it was decided to move the four breeds of rabbits from the Curepipe livestock station to Reduit as the wet climate of Curepipe did not appear to favour this project.

20. The poultry breeding programme was continued. 95 per cent of the selected White Leghorn laid 200 plus eggs at 500 days. The production of '404' hybrid chicks was expanded. 14,545 chicks were hatched, of which 7,664 pullets and 4,724 cockerels were sold to poultry keepers for egg and table poultry production, the remaining 2,157 cockerels being reared for broiler production. In order to meet increasing demands for '404' hybrid chicks, additional parent stock of pullets were imported from the United Kingdom. From the same source, parent stock pullets and cockerels of the '101' hybrid were imported as well as parent stock pullets and cockerels for the production of hybrid broiler chicks from F. G. Sykes in the United Kingdom. The production of Rhodes Island Red, Light Sussex, White Rock and other breeds was continued as well as the breeding of Broad Breasted Bronze turkeys. 3 additional broiler houses were built and a 12,000 capacity incubator was installed. Both the fertility and hatchability of eggs were not as good as last year, average fertility being 77 per cent compared with 82 per cent in 1963, while average hatchability was 56 per cent compared with 70 per cent. The slight fall in fertility and the greater fall in hatchability was considered to be mainly due to a faulty cooling system in the egg

store. As was the case in 1963, the '404' parent stock gave the best reproductivity performance with an average fertility of 81.8 per cent and an average hatchability of 66.6 per cent.

21. There was a slight increase in the demand for the products of the Livestock Feed Factory. 4,324 tons of feeds were manufactured, 16 types of feed being offered by the factory. Orders for additional machinery were placed. A livestock census was carried out during the year by the staff of the Veterinary Services Division. The census revealed that the cattle population of Mauritius was 41,810 made up as follows:

Bulls of the creole breed	...	...	6,738
Females of the creole breed	...	...	25,412
Cross-bred bulls	...	...	2,063
Cross-bred females	...	...	7,597
Sheep	...	...	370
Goats	...	...	68,682
Pigs	...	...	3,696
Poultry	...	...	385,107

The annual cattle census was carried out in Rodrigues.

22. The health of livestock at the various livestock and agricultural stations was satisfactory. No major new diseases were recorded in cattle, save an active case of babesiosis (red water) which occurred in Madagascar cattle imported for slaughter. A further case was found amongst herd cattle at Le Morne. As a result of the latter case, a preliminary survey was carried out at random on herd cattle and indicated a state of pre-immunity in the animals examined. This survey also revealed the presence of anaplasmosis amongst herd cattle. There was no incidence of mastitis amongst cattle at the breeding stations; goats and pigs remained free of any major disease; one case of lameness in pigs was encountered at Curepipe and subsequent investigations, by the 'Région de Recherches Vétérinaires et Zootechniques de Madagascar', of material sent gave negative results for Teschen disease. In poultry, the overall disease picture was satisfactory; coccidiosis amongst chicks at the poultry breeding centre was negligible. Other major diseases amongst poultry were leucosis complex and nutritional deficiency. Worm infestation in poultry was lower than in previous years. During the year, blood samples and eggs were submitted to the Department of Veterinary Services, Southern Rhodesia, for examination which revealed the presence of CRD and the absence of infectious bronchitis. Of 361 blood samples subjected to laboratory tests, only 2.3 per cent gave a positive reaction for CRD indicating infection in carrier birds. On the completion of the Roche Bois Quarantine Station, the Fort George station was closed down. 1,062 import permits and 552 landing permits were issued for livestock and livestock products; 7,700 head of cattle passed through the quarantine station prior to release for slaughter. The Animal Health Laboratory carried out 1,167 post-mortem examinations, 120 faecal examinations, 109 parasitological examinations; 3,200 blood smears were examined in connection with the babesiosis survey and 13 milk samples were subjected to bacterial examination. The laboratory continued to produce Newcastle, fowl pox and canine distemper vaccines. Towards the end of the year, an experienced veterinarian assumed

duty as head of the laboratory. 2,025 head of herd cattle and 530 milch cattle were tested for tuberculosis. There were 56 positive reactors amongst the herd cattle and one in milch cattle. The weekly returns from slaughter houses indicated that 2,973 cows of the milch breed were slaughtered during the year compared with 4,010 cows in 1963. Records of the importation of frozen and processed meats, offals, etc. indicated that Mauritius imported 2,036,118½ lbs of frozen beef and beef products, 1,370,748 lbs of frozen mutton and offals, 282,151½ lbs of frozen pork and pork products, 419,702¾ lbs of frozen poultry and 66,300 dozen eggs. With the continued development of the poultry and pork industries, it should be possible, in the foreseeable future, to replace the bulk of the imports of pork and poultry products with local production.

23. On the 31st of October, the 50th anniversary of the formation of the Veterinary Services in Mauritius was celebrated. The Animal Health Adviser to the Ministry of Overseas Development visited Mauritius in October/November and valuable advice was tendered to the Government on problems connected with the livestock industry and, in particular, on the breeding policy changes for milch cattle.

24. On land settlements, settlers' holdings were farmed satisfactorily. Owing to adverse climatic conditions, sugar-cane and foodcrop yields were below normal. Rent collection was again very unsatisfactory. At Terre Rouge, extensive repairs were carried out to existing masonry irrigation canals and the masonry canal system was extended by 1,500 feet.

25. The crop extension services were again mainly concerned with improved crop husbandry to ensure better yields and higher incomes to small farmers. The rational use of fertilizers, the control of pests and diseases, the use of improved varieties of crops, the use of certified potato seed and soil conservation measures, coupled with field demonstrations were the main agricultural issues on which advice was tendered to farmers. Some 8,300 individual field visits were made. On these visits, particular stress was laid on the importance of the farmer taking early steps to control pests and diseases on the first signs of an outbreak, the use of complete fertilizers and the choice of varieties in relation to regions and the choice of crops and rotations in relation to disease and pest control. Close liaison was maintained between the extension services and the Mauritius Sugar Industry Research Institute as well as with the specialist officers of the department. 31 fertilizer demonstrations on sugar-cane and foodcrops were laid down; marked differences in yield were obtained in favour of the use of complete fertilizers. 136 demonstrations on the proper use of pesticides for the control of insect pests and fungicides for the control of plant diseases were conducted on farmers' crops. 64 evening meetings of small farmers were convened throughout the island. At these meetings, lectures on agricultural topics were delivered, accompanied by visual aids and the distribution of literature. One notable feature of the year's work was the institution of a series of evening meetings at weekly intervals for invited planters at demonstration centres. Three series, of 4 lectures each, on sugar-cane growing were given at Central Flacq, Arsenal and Plaisance and about 2,500 leaflets and 1,000 pamphlets were distributed. Efforts were continued to encourage small cane farmers to use

disease-free planting material. 7,567 canes of 3 commercial varieties were sold to cane farmers from the various demonstration centres and 4,114 tons of planting material was supplied to cane farmers from the Sugar Planters Rehabilitation Fund nursery, at Pointe aux Sables.

26. Late blight was the most important disease affecting potatoes and tomatoes during the year. The disease was particularly troublesome in the wet uplands and at one period, the price of cooking tomatoes was so low that growers were unwilling to apply control measures. Bacterial wilt also caused appreciable loss in the tomato and potato crops. Red spiders, fruit flies, tomato borers and aphids were of common occurrence on farms and the potato tuber moth was particularly troublesome in the Black River area.

27. In June 1964, the Mauritius Sugar Industry Research Institute announced the discovery of a new strain of the organism causing gummosis in sugar-cane. A preliminary survey showed that there were 2 main centres of infection, one at Ferney and the other at Clemencia and that 70 per cent of the Commercial varieties under cultivation appeared to be susceptible in varying degrees to this disease. Very susceptible varieties were M. 147/44, B. 34104, B. 3337, B. 37172 and E. 1/37 while resistance was showed by M. 134/32, M. 31/45, M. 202/46, M. 253/48 and E. 50/47. Immediate steps were taken to advise farmers not to plant susceptible varieties and proclamation No. 22 of 1964 was issued to prevent the varieties M. 147/44, B. 3337 and B. 34104 being planted after the 30th June, 1965.

28. The intercropping of virgin cane interlines with potatoes, tomatoes, groundnuts and beans by small farmers continued. The trend of more potatoes in sugar-cane interlines, which commenced in 1961 and, aided by the seed potato subsidy, continued and in certain localities was extended to ratoon interlines, although the latter practice was not widespread. With a view to increasing the production of the above-mentioned crops on sugar estates and farms, an *ad hoc* committee was set up towards the end of the year to encourage foodcrop production in 1965. Targets were set for the production of groundnuts, maize, beans and potatoes as well as vegetables for the first half of 1965.

29. The six demonstration plots operated by the extension services were maintained satisfactorily and continued to supply a wide range of planting material of both food and forage crops to meet increasing demands. Vegetables were grown to demonstrate to planters demonstration techniques and the varieties available. A limited amount of disease-free cane material of recommended varieties was also made available to planters. Some of the stations were stocked with creole cattle, rabbits and poultry to demonstrate husbandry techniques. Following damage to vegetable plantations by cyclone *Danielle*, vegetable seeds were issued free to 659 growers immediately following the cyclone which resulted in a good supply of fresh vegetables coming on to the market as soon as possible after the cyclone. The "Produce More Food" campaign was extended to the villages of Camp Ithier, Laventure, Esperance and Quartier Militaire. Efforts were mainly directed towards the growing of fruit trees and the raising of poultry. Local committees met at regular intervals and weekly visits were paid by extension officers. 1,200 fruit

trees of various types and 650 chicks were distributed together with planting material of sweet potatoes, manioc, acacia, bananas, pineapples and fodder grasses. 5 Anglo-Nubian goats were sold to farmers. 2 arpents of river reserves, under the control of small farmers, were planted with fruit trees and pangola grass. Fruit trees delivered at the beginning of the campaign in 1961 and 1962 started to fruit. A number of lectures and demonstrations were arranged for Young Farmers Clubs and Youth Clubs and facilities for obtaining fruit trees and planting material were extended to members of these organizations. One pit silo with a capacity of 22 tons was constructed during the year and 9 silo pits were filled. The silage produced was of good quality and was readily eaten. The demonstration spraying unit appeared to have served its purpose as demands for its use were less than in previous years for the reason that planters appear to have appreciated the value of controlling pests and diseases and in consequence have purchased their own spraying equipment.

30. The certified seed potato subsidy scheme was continued. 1,632 permits were issued and 731 tons of certified seed were allocated. 1,000 arpents of planter's farms, on which it was proposed to grow potatoes, were inspected prior to delivery of permits and subsequent to delivery to determine whether the seed had been planted. The demand for permits was greater than the supply of seed available under the subsidy scheme and, in consequence some planters secured seed outside the scheme. It was estimated that 1,200 arpents were planted to potatoes during the year, the average yield was just under 5 tons per arpent; later plantings suffered from drought with adverse effect on yields. The scheme has undoubtedly had a beneficial effect on potato production and it should now be possible to phase out the subsidy over the next 2 years.

31. The foodcrop production of the island was estimated at 31,171 metric tons compared with 37,118 metric tons in 1963. Adverse weather conditions undoubtedly had an adverse effect on production. There was a reduction both in area harvested and yield of most foodcrops planted, except groundnuts and potatoes. Groundnut production was estimated at 509 metric tons compared with 446 in the previous year, while the production of potatoes was estimated to be 5,930 metric tons, an increase of 941 metric tons in 1963. The increase in potato production was undoubtedly partly due to the certified seed potato scheme and the encouragement given to small farmers in pest and disease control as well as the increased use of fertilizers.

32. Experimental work on the various stations was carried out as planned. At Curepipe, the road system of the station was improved and extended. The fencing of the station was completed and the construction of a fertilizer and tool store was commenced. Variety and fertilizer trials on forage grasses as well as fodder introductions were continued. Selected strains of *Setaria* continued to give the highest yields, of all forage grasses tested on the station. The orchard crops continued to make progress in spite of cyclonic damage. Variety spacing and fertilizer trials were laid down on *Colocasia esculenta*, potatoes and ginger. The potato crops were all severely affected by blight and gave poor yields; certain of the varieties under trial exhibited fair resistance. Winter vegetables were again produced during the

summer months, thus confirming the results of previous years, namely that in the upland areas, such as Curepipe, it is possible to produce winter vegetables during the summer.

33. The production of fresh water fish in the ponds of the station was continued with satisfactory results. The flocks of ducks and geese, living in association with fish in the fresh water fish ponds, continued to thrive.

34. At Plaisance, the orchards of citrus, Malayan Dwarf and Pemba coconuts, litchi, avocado pears and vines continued to thrive. The citrus, planted in 1961, fruited and the quality of the oranges produced was very satisfactory. The fruit orchards were interplanted with vegetables for seed production and one field of citrus with pineapples. On the airfield, the production of *Setaria*, elephant grass and acacia for the supply of forage to the livestock breeding station at Curepipe was maintained. 6 acres of land under grass, which were bulldozed to make way for the extension of the run-way, were replaced by the planting of an additional 7 acres under grass. The mango orchard was fenced and thinned which, together with regular fertilizing, resulted in a fair crop being harvested, in spite of anthracnose affecting the inflorescences. The orchard produced the 'Maison Rouge' seed requirements of the department for the production of grafted mangoes and enabled seed to be sent to Rodrigues to re-establish 'Maison Rouge' orchards on that island destroyed by cyclones.

35. At Reduit, the clearing and development of an additional 10 acres of land were completed, together with the laying of the distribution system for overhead irrigation. Cyclone damage resulted in a 50 per cent fruit drop in the citrus orchard, which continued to make satisfactory progress. The banana collection was severely damaged by cyclone *Danielle* as were paw-paws. An avocado pear orchard was established. The resistant *Coffea arabica* varieties, introduced from Kenya, continued to show promise. The fodder grass and legumes introduction plots were maintained. The stool selection of *Setaria splendida* was multiplied. Rhodes grass showed no response to phosphate in a fertilizer trial. Imported varieties of acacia proved superior to the local variety both in leaf production and yield. The interplanting of Elephant, Giant Rhodes and slender Guinea grasses with various legumes indicated that *Desmodium intortum* was the only legume which showed promise of establishing itself successfully amongst some of the grasses. It was interesting to note that *Desmodium intortum* swamped pangola grass completely. It grew well in association with slender Guinea grass, fairly well with Elephant grass but was choked out by Giant Rhodes grass. Trials with cassava, sweet potatoes, groundnuts, maize and ginger gave indifferent results mainly due to weather conditions. The imported groundnut varieties showed resistance to *Cercospora* and chocolate spots to which the local variety was markedly susceptible.

36. At Barkly, the development, including the installation of an overhead irrigation system of the additional 8 acres of the station, acquired in 1963, was completed. 34 acres of the station were fenced and the vegetable seed store was extended. An additional 'Mac Penny' mist propagator was installed to increase the production of vegetative propagated plants to meet

increasing demands. This station was the centre of vegetable seed production and controlled the seed producing acreages on other stations. 28,000 lbs of vegetative seeds were produced from 51 acres, of which 32 acres were at Barkly. 4,000 Florida rough lemon stocks were budded with various orange varieties and mandarin and 2,500 budded citrus plants were released for sale to the public. 5,000 Malayan Dwarf coconuts were imported from Penang for use throughout the department and sale to the public. The litchi orchard appeared to have at last recovered from the effects of cyclone *Carol* and a fairly large crop was harvested. The Tropical Beauty apple, introduced from Queensland two years ago, began to bear fruits. The peach varieties introduced from South Africa made satisfactory progress.

37. At Abercrombie, the grape variety 'Napoleon Chasselas' introduced from Réunion in 1961, yielded an excellent crop of 200 bunches weighing on average 1 lb each, which was equivalent to a yield of 23,000 lb per acre of good quality eating grapes. 300 plants of this variety were propagated. The mango orchard continued to make good progress.

38. The Royal Botanical Gardens were maintained and roads and walls repaired. 6 new kiosks were built for the use of the public. The area of the gardens was increased by about one acre by the reclamation of a camp site. It was estimated that 127,000 people visited the gardens during the year.

39. At Richelieu, the clearing and development of 40 acres of land, previously under aloe fibre, were continued. By the end of the year, 20 acres had been cleared and graded terraces constructed; 10 acres remained to be cleared and terraced, the remaining area was occupied by windbreaks, drains, heaps of stone etc. Overhead irrigation equipment was ordered capable of irrigating 3 acres at a time. The station continued to produce the tobacco seed requirements of the country and, together with Pamplémousses station, provided facilities for the applied research work on tobacco. Methyl bromide again proved the cheapest soil sterilant and was used to treat a number of tobacco seed beds in the Black River, Pamplémousses and Rivière du Rempart areas. Very good control of soil pests, diseases and weeds, including onion grass, *Cyperus rotundus*, was obtained. The practice of planting additional seed beds with the commercial tobacco varieties was continued as an insurance against loss of seed beds by planters through cyclones. Seed production was maintained with a view to holding 2 years' supply of seed of the commercial varieties in case of natural disasters. The varieties Yellow Mammoth and Bonanza remained the principal flue-cured Virginian varieties planted on a commercial scale. The 3 varieties released last year Vesta 30, N.C. 73, and Cokers 187 continued to show promise as to yield, quality and resistance to disease. The Tobacco Board issued permits for the production by small growers of 10 tons of Burley; yields averaged 1,300 lbs per acre which was considered a fair return under the dry conditions that prevailed. Variety and fertiliser trials were carried out and 2 oriental tobacco varieties were introduced. In a variety trial, the 3 recently released varieties proved better yielders than two of the older established varieties. The use of polythene sheets on tobacco seed beds proved beneficial both as to rapidity of germination and uniformity of seedlings. Owing to scarcity and rising costs of firewood, it was considered necessary to extend the tobacco curing trials

with a view to comparing the performance of barns equipped with 'Gastobac' equipment, utilising commercial Methane/propane gas, 'Nu-Oilmatic' equipment, utilising paraffin or diesel oil, compared with the UHMA steam curing equipment and conventional flues and chimneys burning firewood. Three cures were carried out with the 3 main pickings, namely bottom leaf, middle leaf and top leaf. There was sufficient tobacco to fill 3 barns with bottom and top leaf and 4 barns with middle leaf. In consequence, a comparison between the 3 methods and steam curing was only possible with middle leaf. The results indicated that the average yield of cured leaf was the same for all methods of curing by the graded composition and consequently the value per kilo of leaf obtained, did not differ significantly between conventional flues using firewood, 'Gastobac' and 'Nu-Oilmatic' equipment, steam curing giving better results than the customary flue-curing at Richelieu. The estimated cost of curing per kilo of leaf indicated that the 'Gastobac' equipment was the most expensive. Owing to the danger of taint, particularly when using paraffin or diesel oil, samples from the curing trials were submitted to the British-American Tobacco Co. (Mauritius) Ltd. for testing. The leaf produced by the oil curing unit was baled and stored pending the results of the taint tests. Revenue obtained from the tobacco produced at Richelieu and Pamplemousses amounted to Rs 26,619. In addition to the tobacco work, experiments were carried out on potatoes; the variety Dalaware was again the best yielder at Richelieu. Trials indicated that the dormancy of freshly-lifted potatoes could be broken by treatment with ammonium thiocyanate. Experiments were also conducted on maize for both seed and silage as well as on vegetable crops and beans. 7 acres of French beans were cultivated as well as 3 varieties of lettuce, brinjals, coriander and tomatoes for seed production. 690 tons of sugar-cane were harvested from 18 acres. Planting material of Pangola and Elephant grass was supplied on demand to a number of estates and small growers. Under conditions at Richelieu, pangola has forwarded a satisfactory sward and has eliminated all weeds including 'chiendent', *Cynodon dactylon*. A citrus orchard planted in 1959 fruited and an additional $3\frac{1}{2}$ acres was prepared for planting under citrus. The mango and litchi orchards continued to make progress, the mango varieties 'Baissac' and 'Maison Rouge' fruited. A bitumen seal applied to the bottom of the fish pond was effective in preventing seepage.

40. The Agricultural Division was responsible for the planting and maintenance of pangola grass at Arsenal for the production of fodder for use by cowkeepers in the vicinity. At La Ferme, a stage of cutting trial on *Heteropogon contortus* was established as well as a variety trial containing species considered promising under dry land conditions. The extension of the pangola pastures at Palmar was continued, 3 paddocks being planted. Stone walls were erected in areas where stones were available for the fencing of paddocks. Trials of introduced grass and acacia were continued.

41. During the year, the tobacco crop was unusually free from leaf spotting diseases and aphid vectors were scarce with the result that the incidence of virus diseases on tobacco was less than in the previous year. Strains of tobacco mosaic together with strains of potato virus Y as well as

cucumber mosaic occurring singly or in mixtures were identified by the Virus Research Laboratory, Cambridge, from the leaf samples of the tobacco virus complex sent in 1963. A root disease of tea, caused by the fungus, *Cylindrocladium parvum*, occurred on a few plants at the tea experiment station, Wooton. The incidence of virus disease on potatoes was lower than in past years. Leaf roll virus was recorded and occurred mainly on the variety Kennebec. Scattered infections of potato virus Y also occurred, particularly on the variety Susanna. During the winter, conditions were favourable to the development of late blight. The fungicides M. 45 and Maneb gave reasonable control of this disease. Both fungicides also proved effective in controlling late Blight and grey leaf spot in tomatoes. The introduced groundnut varieties Manipintar, Makulu Red and Katumani were not as susceptible to *Cercospora* leaf spot as the local variety 'Cabri'. Citrus canker was again widespread and twig die back of citrus, *Diaporthe citri*, was recorded for the first time. A survey of the diseases affecting beans indicated that the commonest leaf disease of beans was angular leaf spot, occurring throughout the year, while halo blight appeared to mainly affect winter plantations. Fungicide trials and disease investigations with onions, egg plant, peas, vegetable crops and fruits were carried out. 1,434 import permits for plant material were issued and 3,948 certificates of examination were delivered. 380 phytosanitary certificates were issued for plant material being exported. The plant quarantine green houses at Reduit for crops other than sugar-cane were maintained and were in operation throughout the year. Amongst the crops under quarantine were vines, citrus, and avocado pears from Réunion, tobacco varieties, bean varieties and mango varieties from Burma. The sugar-cane quarantine green house was operated by the Mauritius Sugar Industry Research Institute on behalf of the Department of Agriculture. For the 1964-66 quarantine period, 44 sugar-cane varieties have been introduced. During the year, 14 plant diseases were recorded for the first time and the virus complex affecting tobacco was identified.

42. The predatory snail, *Euglandina rosea*, continued to thrive and has become very common in the two wet localities in which it was released in 1959. This snail undoubtedly reduced the giant African snail population in the areas of release. Unfortunately, it appeared to be multiplying rather slowly. It was possible to collect specimen from these areas for release elsewhere. No recovery of fruit fly parasites occurred. The Natal fruit fly appeared to be the predominant fruit fly attacking guavas and peaches. In Mauritius, the rhinoceros beetle continued to move slowly northwards in spite of the sanitation campaign carried out on coconut plantations north of Port Louis. Spread of this pest was assisted by the presence of manure heaps. Attempts at biological control of the pest were continued with the release of the wasp, *Scolia oryctophaga*, collected in the south of the island and the predator, *Pheropsophus* sp., introduced from India. A visit was made to the Chagos Archipelago to determine whether the parasite, *Scolia ruficornis*, introduced into Diego Garcia, had become established. It was discovered that these wasps parasitised the larvae of the rhinoceros beetle when they were found in manure heaps. They were apparently unable to reach the larvae in dead coconut trunks. The predator, *Platymeris laevicollis*, liberated in 1963, was not recovered. The potato tuber moth and tobacco leaf miner were parti-

cularly troublesome and infestation was so high in some areas that the moth attacked adjacent tomatoes and egg plant once the potato crop was lifted. A parasite of this moth was introduced late in the year with the assistance of the Commonwealth Institute of Biological Control and has since been successfully bred in the laboratory, released and parasitised larvae have been recovered. No major outbreak of the red locust occurred. Trials with various insecticides against the numerous crop pests of Mauritius were continued. At the end of the year, the Director of the Commonwealth Institute of Biological Control visited Mauritius. As a result of this visit, suggestions were made as to the assistance which the Institute should be able to give in connection with the control of fruit flies, the potato tuber moth, the control of lepidopterus pests, the rhinoceros beetle and lantana.

43. Routine analyses of the raw materials imported for the manufacture of livestock feeds were carried out as well as analyses of the prepared feeds. The analyses of introduced grasses and other forage crops under trial, together with silage both for dry matter and protein content were continued. Routine checks of the milk produced at the Curepipe dairy indicated an improvement in the fat level; 74 per cent of the samples analysed possessed a fat content of 3.5 to 4.5 compared with 70 per cent in 1963. Experiments were undertaken as to possibility of utilising the freezing point of milk for detecting adulteration. The Gerber apparatus appeared to have advantages over the Hortvert. Investigations into the hecogenin content of aloe fibre leaves were undertaken and the crude extraction was despatched to the Tropical Products Institute for assessment of purity. Investigations were commenced into methods of determining the cobalt status of the various types of fodder utilised throughout the island. A method of determining the aflatoxin content of groundnut cake, to be utilised in the manufacture of livestock feeds, was developed from those published by the Tropical Products Institute. The detection and estimation of aflatoxin in groundnut cake received in Mauritius can now be considered satisfactory.

44. The Engineering Division was responsible for the servicing, repair and maintenance of all departmental vehicles, tractors and machinery. At the central workshop, about 33 vehicles, tractors and machines were serviced and repaired. Two tractors were overhauled and hard top cabs were fitted to two jeeps. The division also manufactured a tool bar for the Ferguson tractor, trailer bodies, a limited amount of furniture, ice boxes for the Fisheries Division, fence posts and miscellaneous items required by the various divisions of the department. In addition, a 12,000 egg capacity incubator was assembled, a weighbridge was dismantled and re-assembled, a fumigation drum was designed and manufactured as well as an incinerator. The development of the Roche Bois Quarantine Station was completed and handed over to the Veterinary Services Division. At Wootton, a hardening shed, to be used in association with the mist propagator, was completed and a start was made on the construction of a second green house to accommodate another mist propagator. A new concrete store for raw materials was commenced at the livestock feed factory as well as the construction of a molasses storage tank with a capacity of 300 metric tons.

45. The enforcement of the fishing regulations and the collection of fish landing statistics were continued. Considerable time and energy were spent in preventing the dynamiting of fish and some success was achieved with the inauguration of a flying squad, coupled with the co-operation of the Police. One fisheries post and two fish sheds were constructed. In the year under review, 1,145 tons of fish were landed, a reduction of 330 tons compared with 1963. The catch was even worse than in 1962, which was the worse year for fishing experienced in the past 5 years. The reduction was mainly attributable to the prevalence of strong trade winds throughout the winter. A scheme which provided for loans to fishermen for the construction of boats, which was commenced in 1960, was recommenced and, by the end of the year, 1,387 loans were granted including 28 which were written-off following the destruction of the boats by cyclones. The total expenditure was Rs 592,296; the refund of loans was irregular. There was a reduction in the number of contraventions compared with previous years.

46. Throughout the year, Dr. H. Fougere of the Fisheries Research Board of Canada continued to assist in the development of the fisheries of the island. Work was continued on the development of oyster culture; unfortunately variations in salinity and temperature appeared to have caused considerable damage to young oysters at the Pointe de Flacq oyster bed. In spite of this setback, results continued to be encouraging. Investigations into the methods of catching sharks, the processing of shark flesh and its subsequent drying were completed with the development of economic techniques. Staff were trained and steps are being taken to train a small number of fishermen. The market was tested with good quality dried salted shark and the consumer response was most satisfactory. Investigations were commenced at the fisheries post at Mahebourg into the systematic exploitation of the barachois with a view to determining the economics of production and the yield that can be expected from a well managed barachois. Subsidiary investigations were conducted and are continuing into oyster production in an enclosure compared with the main body of water in the barachois. The gill net investigations showed that the returns per individual fisherman were at least equal to the returns obtained when a group of fishermen use a large seine. The advantages of the gill net were selectivity of the catch and the greater ease of operation. A further advantage was the reconstruction of a fishery by respecting immature fish and normal feeding and spawning migrations. These investigations are continuing but undoubtedly the use of gill nets will make a major contribution to rational fisheries management in the future and should result in greater yields from the available fishing grounds.

47. For the first time for some years, the island of Rodrigues experienced good growing conditions for crops and neither a drought nor a severe cyclone was experienced. A record crop of 500 tons of onions was produced and there was a record export of 4,656 pigs. The Agricultural Marketing Board declared onions a scheduled crop in Rodrigues and the Rodriguan farmer thereby enjoyed the highest prices that he had ever received for his onion crop. The value of exports increased by just under Rs 200,000 for the third

successive year. This can be regarded as creditable when it is borne in mind that every year more meat and fish is being consumed on the island as the population increases and the standard of living rises.

48. The agricultural development programme of the island was continued and, at the close of the year, 1,239 vegetable plots, 857 lowland farms, 1,210 unit farms and 34 dairy farms had been developed and were under cultivation. A survey made during the year showed that out of 3,650 families, 839 were operating lowland farms, 1,210 were on unit farms in the uplands and 301 were working valley bottom farms which have been developed in recent years. 1,088 families were farming on unprotected and non-rehabilitated land of very poor fertility, subject to severe erosion. All lowland farms were highly fertile as were all valley bottom farms. About half of the unit farms were slowly recovering from the effects of severe erosion and bad land management, prior to rehabilitation. It was estimated that it takes at least 6 years to rebuild the soils of rehabilitation farms to a satisfactory level of fertility. In consequence, relief work was recommenced from December 1963 to May 1964 to assist those farmers possessing rehabilitated unit farms, the soils of which had not recovered their full fertility as well as the farmers still farming non-rehabilitated land. It is clear that relief work will have to be continued annually for about 10 years at a level of about 2,000 families annually for the next 3 to 4 years, following which the number of families requiring relief work will gradually fall. At the close of the year, 30 dams and 15 water storage tanks were in operation together with 3 pumping stations. To date 144,641 feet of water distribution pipe had been laid to serve the developed farms.

49. The re-forestation with filao of steep, eroded slopes and hill tops was continued; 250 acres were planted making a total of 1,550 acres re-afforested since the inauguration of the development programme. These plantations have resulted in a striking improvement in wind and water control and filao has proved an excellent tree for giving quick cover on poor eroded soils and wind-swept ridges.

50. The demonstration unit farms were maintained as well as the six livestock breeding centres for the production of cattle and pigs for sale to farmers. At the end of the year, the breeding centres and demonstration farms were stocked with 428 head of dairy cattle, 249 pigs of all ages and 78 sheep on Gombrani and Crab islands. The annual census of cattle on the cattlewalk was undertaken but unfortunately the census records have been accidentally lost. The progeny of two Boran bulls showed promise. Five Friesian bulls were introduced from Australia via Mauritius with a view to increasing the milk potential of cows on rehabilitated farms. Pangola grass has become well established wherever it has been planted on the cattlewalk. Rotational grazing trials with this grass, which have been undertaken in the past 2 years at Montagne Goyave, indicated that 1.9 springing heifers could be maintained on one acre of Pangola grass subdivided into quarter acre paddocks and rotationally grazed on the basis of 3 days grazing and 33 days rest coupled with systematic fertilisation.

51. The development of the lagoon islands was continued and Malayan Dwarf coconuts planted on Ile de Chat and Gombrani in 1963 have grown very satisfactorily. Further plantings of Malayan Dwarf coconuts were made on Ilot de Coco, Ilot de Sable, Ilot Plat and Gombrani. 15 tons of acacia seed were harvested off the lagoon islands for stock feed.

II. Boards and Committees

52. The Director of Agriculture or his representative served on the following boards and committees:

- Agricultural College Advisory Board.
- Agricultural Marketing Board.
- Board of Agriculture, Fisheries and Natural Resources.
- Board of Examiners of the College of Agriculture.
- Board of Examiners for the Registration of Agricultural Chemists.
- Cane Release Committee.
- Comité de Collaboration Agricole Maurice—Réunion—Madagascar.
- Customs Tariff Advisory Board.
- Cyclone and Drought Insurance Board.
- Fisheries Committee.
- Government Sack Factory Board.
- Irrigation Committee.
- Land Acquisition Board.
- Land Settlement Committee.
- Malaria Advisory Board.
- Mauritius Sugar Industry Research Institute Executive Board.
- Mauritius Sugar Industry Research Advisory Committee.
- Sugar Industry Rehabilitation Fund Committee.
- Sugar Industry Reserve Fund Committee.
- Sugar Millers' Rehabilitation Fund Committee.
- Sugar Planters' Rehabilitation Fund Committee.
- Tea Control Board.
- Tea Manufacture (Sugar Millers) Ltd. Board.
- Tobacco Board.

III. Board of Agriculture, Fisheries and Natural Resources

53. The Board functions under Ordinance No. 29 of 1957. The following advisory committees were set up by the Board for specific purposes:

- (a) The Cane Release Committee.
- (b) The Fisheries Committee.
- (c) The Irrigation Committee.
- (d) The Land Settlement Committee.

54. The Board met on two occasions. It was concerned with the desirability of increasing food production and the utilisation of the natural resources of the country. It had always appreciated that food production could not be intensified, particularly on cane farms, until such time as marketing facilities were available. With the setting up of the Agricultural Marketing Board in May, the formation of an *ad hoc* food production committee became possible to encourage and co-ordinate food production on cane fallows and cane inter-

lines. In June, the United Nations approved the Special Fund Project " Land and Water Resources Survey " and the Project Manager arrived in Mauritius in November to commence the project. The Board also considered the outbreak of a new strain of gummosis disease in sugar-cane and recommended to Government the setting up of an advisory field service for small planters to undertake a detailed survey of cane plantations and advise the planters on remedial measures.

55. One meeting of the Cane Release Committee was held at which the varieties that could be planted during the year, together with new releases, were decided upon and the necessary recommendations made to the Central Board for proclamation. It was not possible to proclaim that the variety M. 147/44, which appeared to be very susceptible to the new strain of gummosis, should be uprooted by a specified date until such time as the necessary amendment had been made to the Sugar Cane Plantations (Control) Ordinance of 1945.

56. The Fisheries Committee met on four occasions and was particularly concerned with the progress of the research work being carried out by the Canadian Fisheries Adviser on the use of gill nets, the catching and processing of shark and the stocking of barrachois as well as with cases of illegal fishing and loans to fishermen.

57. The Irrigation Committee met on five occasions and was particularly concerned with reviewing the water situation in reservoirs and determining the quantity of irrigation water that could be made available to farmers. The Committee was concerned with the supply of irrigation water from Mare aux Vacoas, Mare Longue, Tamarin Falls, La Ferme and La Nicolière reservoirs.

58. One meeting of the Land Settlement Committee was convened but could not be held because of lack of quorum.

IV. Mauritius Chamber of Agriculture

59. The Chamber of Agriculture continued to play its important role in the agricultural affairs of the island. As customary, its representatives took part in the annual discussions in the United Kingdom in connection with the Commonwealth Sugar Agreement. It appointed a committee to administer the Sugar Industry Reserve Fund as well as nominated delegates to sit on numerous boards and committees. The work of this organisation was fully reported in its annual report.

V. Comité de Collaboration Agricole Maurice—Réunion—Madagascar

60. Three delegates from Mauritius visited Réunion in April to attend a meeting of the Pathology sub-committee. The annual conference of the Comité was held in St. Denis, Réunion, from the 24th November to the 1st December. It was attended by six delegates from Mauritius. During the course of a very well organized meeting, delegates visited the research stations and projects of the Department of Agriculture and the sugar industry as well as new hydro-electric scheme. The Comité decided to continue the

Fiji disease trials at Brickaville and Mauritius will continue to contribute Rs 6,000 per annum towards the cost of these trials, this contribution being similar to that paid by Réunion. In addition, Mauritius will continue to contribute Rs 13,000 per annum towards the cost of Fiji disease control in the port and vicinity of Tamatave. The co-operation of the Republic of Madagascar is gratefully acknowledged in carrying out resistance trials to Fiji disease, using cane varieties from Mauritius and the prevention of cane susceptible to Fiji disease entering the port of Tamatave.

61. Among the visits sponsored by the Comité in the 3 territories, the following were of special interest to Mauritius:

- (a) Visit by Mr. R. Antoine to Madagascar in connection with the control of Fiji disease of sugar-cane;
- (b) Visits by Dr. E. Rochecouste and Mr. J. R. Williams to Madagascar;
- (c) Visits by Mr. J. Vinson and Mr. Wong You Chong to Réunion;
- (d) Visit by three Mauritian delegates to Réunion in connection with the Pathology sub-committee, Messrs. M. D. French-Mullen, P. O. Wiehe and R. Antoine;
- (e) Visit by six Mauritian delegates to Réunion in connection with the annual conference of the Comité, Messrs. M. D. French-Mullen, P. O. Wiehe, R. de Chazal, R. Antoine, René Noël and P. G. du Mee;
- (f) Visit by Messrs. Baudin, Ravoavy and Lauffenburger of Madagascar to attend the Pathology sub-committee in Mauritius;
- (g) Visits to Mauritius by Mr. Uhlen from Réunion and Messrs. Tetefort and Wintrebert from Madagascar;
- (h) Visit to Réunion by 6 students and two members of the staff of the College of Agriculture;
- (i) Two visits to Mauritius by 5 and 6 students respectively accompanied by two staff from Réunion;
- (j) Visit to Mauritius by six students accompanied by two staff from Madagascar.

62. Requests for planting materials of various kinds from Réunion were met as well as requests made to Réunion by Mauritius. Amongst material received from Réunion have been several promising varieties of grapes; one of which, introduced some years ago, 'Napoleon Chasselas' has proved very successful at Abercrombie.

VI. College of Agriculture

63. In 1964, the first Diplomas from the new courses of study in Agriculture and Sugar Technology were awarded. In the light of experience over the past three years, the curricula of both courses were modified. The one-year Certificate courses in Cane Cultivation and Sugar Analysis were held but no course in Tropical Agriculture was offered, there being insufficient demand.

64. The teaching staff consisted of four full-time lecturers, three full-time assistant lecturers and demonstrators, and 19 part-time lecturers. The teaching of Sugar Technology and Engineering, of specialised aspects of agriculture and of some applied subjects, such as Economics, Statistics and Meteorology, was undertaken, on a part time basis, by specialist officers of the Department of Agriculture, the Sugar Industry Research Institute and other Government Departments.

65. A compulsory special project consisting of a dissertation and a talk on an original agricultural topic was introduced into the third-year Agriculture curriculum and proved successful.

66. During his overseas leave, the Principal visited a number of agricultural and technological institutes in Kenya, Uganda, Israel, Denmark, United Kingdom, United States of America and Trinidad.

ENTRANCE EXAMINATIONS AND SCHOLARSHIPS

67. There were 93 applicants for admission to the Diploma Courses of which 76 sat for the examinations. Of these, 9 were admitted to the Agriculture course and 7 to Sugar Technology.

68. Two entrance scholarships were awarded by the College. The de Sornay Scholarship was not awarded as the candidate did not reach the required standard.

STUDENT BODY

69. The number and distribution of students were as follows:

<i>Course</i>	<i>1961</i>	<i>1962</i>	<i>1963</i>	<i>1964</i>
Diploma	49	51	47	48
Certificate in Sugar-Cane Cultivation ...	13	16	17	18
Certificate in Sugar Analysis	10	—	11	9
Part-time	—	2	3	—
TOTAL	72	69	78	75

EXAMINATIONS RESULTS AND LAUREATESHIPS

70. The results of the annual examinations held in March 1964 were as follows:

	1963		1964	
	<i>Sat</i>	<i>Passed</i>	<i>Sat</i>	<i>Passed</i>
Diploma in Agriculture, 1st Year	11	5	13	6
Diploma in Sugar Technology, 1st Year	8	8	6	6
Diploma in Agriculture, 2nd Year	10	10	5	5
Diploma in Sugar Technology 2nd Year,	5	5	9	9
Diploma in Agriculture, 3rd Year	—	—	10	10
Diploma in Sugar Technology, 3rd Year	—	—	4	4
Certificate in Cane Cultivation	11	5	17	15
Certificate in Sugar Analysis	—	—	10	8

71. Of the seven failures in the first-year examinations for the Diploma in Agriculture, five repeated the year and two left the College; of the fourteen who passed in the third-year, one obtained the Honours Diploma.

72. A laureateship was awarded to Mr. Prithiviraj Oogarah who obtained a Diploma in Agriculture. A second scholarship was awarded to Mr. Jocelyn Deville, who came second in the Agricultural stream. Mr. Deville obtained admission to the University of Wales to study Agricultural Chemistry. No laureateship was awarded to a diplomate from the Sugar Technology stream.

VISITS OF STUDENTS

73. Under the auspices of the "Comité de Collaboration Agricole Maurice—Réunion—Madagascar", two parties each of five and six third-year students, accompanied by two members of the staff, visited Réunion in January and July. The return visit by Réunion students and staff took place in August. In December, a party of six students from Madagascar, accompanied by the Director of the College Rural d'Ambatebe, spent a week in Mauritius.

UNIVERSITY OF MAURITIUS PROJECT

74. A number of distinguished visitors from overseas visited the College in connection with the University of Mauritius project: these included Sir Christopher Cox, Mr. H. Warren, Dr. Griffiths, Sir Charles Morris, Professor B. Jones and Professor C. T. Leys.

PRESENTATION OF AWARDS

75. His Excellency the Officer Administering the Government presented the Diplomas and Prizes on the 11th of November in the presence of the Premier and a number of distinguished guests. The Minister of Agriculture and Natural Resources spoke on the desirability of setting up a university in Mauritius.

ADVISORY BOARD

76. The Advisory Board of the College of Agriculture met on four occasions. During the course of the year, it revised the college regulations which had become necessary following the setting up of two Diploma courses. In the light of experience, the College curricula for both courses were modified, after taking the advice of the Academic Board.

VII. Control Board

77. The Control Board operated under the Sale of Canes (Control) Ordinance. The executive machinery of the Board was run as a division of the Department of Agriculture.

MEETINGS OF THE BOARD

78. The Board held 35 meetings during the year as follows:

- 4 meetings in connection with the assessment of sugar to planters;
- 4 meetings in connection with the closing down of weighbridges;
- 6 meetings in connection with the changes of delimitation of factory areas;
- 10 meetings in connection with protests against assessment of sugar;
- 11 meetings in connection with general business.

CANE TESTING

79. The number of tests carried out on the canes supplied by 252 planters or groups of planters and 131 millers' estate sections totalled 19,936. The tests were carried out at 22 factories. The corresponding figures for the 1963 crop were 22,939 tests in respect of 240 planters or groups of planters and 132 millers' estate sections supplying canes to 22 factories.

ASSESSMENT OF SUGAR

80. Following the publication of figures of provisional assessment of sugar to planters for the 1963 crop, 13 Co-operative Credit Societies and 6 planters lodged protests against the awards made by the Board. All the protests were considered by the Board and various measures were decided upon to remove the causes of complaint. However, in no case, was the provisional assessment varied. Three Co-operative Credit Societies and three planters withdrew their protests.

COST OF PRODUCTION

81. Questionnaires were forwarded to 70 planters, selected according to the weight of cane produced, and to 23 sugar estates with factories to secure the data necessary for the computation of costs of production.

TRANSPORT COSTS

82. Prior to the crop, a schedule of rates of transport was forwarded to sugar estates with factories showing the maximum rate claimable by millers for the transport of planters' cane from the various outlying weighbridges to the factory in each factory area.

83. The schedule was based on the following formula for transportation by road:

$$C = \text{Rs } (2.30 + 0.20m)$$

Where 'C' is the cost of transport per ton of cane and 'm' the number of miles over which transport is effected.

84. According to law, the transport of planters' cane by millers by light railway is claimable at the road rate and limited to the cost of transport over a maximum of 4 miles. Millers reimburse planters for expenditure incurred in the transport of their cane over distances in excess of four miles, at a rate fixed by the Board of 20 cents per ton/mile.

DELIMITATION OF FACTORY AREAS

85. Sixteen applications for changes of delimitation of factory areas were received; all were rejected or not entertained.

PERMITS TO MIDDLEMEN

86. Permits were issued to fifty-four middlemen for the crop.

COMPLAINTS AGAINST MIDDLEMEN

87. Forty-two complaints against middlemen were received, the majority being in connection with the payment of compensation by the Cyclone and Drought Insurance Fund. The parties settled their differences following enquiries made by officers of the Control Board. Three middlemen had their permits cancelled by the Board.

CANE CONTRACTS

88. There were 12,750 contracts registered. The total number of contracts in force in 1964 was 15,023 covering some 24,000 planters.

BREACH OF SALE OF CANES (CONTROL) ORDINANCE

89. Eight cases of breach of Sale of Canes (Control) Ordinance were reported to the Police.

90. The number of planters who failed to enter into contract before the 30th June totalled 148 compared with 361 last year.

CANE VARIETIES

91. During the year under review, the varieties approved for planting were the following: M. 134/32 (together with its white and striped spots), M. 112/34, M. 423/41, M. 147/44, M. 31/45, M. 202/46, M. 93/48, M. 253/48, Ebene 1/37, Ebene 50/47, B.H. 10/12, B. 3337, B. 34104, B. 37161, B. 37172.

CONTROL OF CANE WEIGHBRIDGES

92. The number of weighbridges in operation was 118, compared with 120 in 1963, two having closed down with the Board's approval. All the weighbridges were tested by officers of the Board; 110 weighbridges were found to be accurate on first examination, six on second examination and the remaining two on third examination. All weighbridges were tested for accuracy again during October and were found to be accurate.

SURPRISE CHECKS CARRIED OUT AT WEIGHBRIDGES DURING THE CROP

93. During the crop, 371 surprise checks were carried out and 295 vehicles were re-weighed (86 carts and 209 lorries). In nine cases the weighing was found to be inaccurate, five weighers were prosecuted and a warning was issued to the other four.

VIII. The Sugar Industry

CROP RESULTS

94. The total area under cane was 205,000 arpents of which 194,870 were reaped, compared with 204,200 and 194,080 respectively for 1963. The passage of four cyclones during January and February in the vicinity of Mauritius, one of which was accompanied with hurricane force winds, together with the early onset of cold weather, contributed towards the production of a mediocre crop. The production of sugar amounted to 519,900 metric tons compared with 685,500 in 1963. The yield of sugar per arpent was 2.66 metric tons, compared with 3.55 in 1963. The average crushing rate was 95.4 metric tons per hour, compared with 97.8 in 1963; the average daily crushing rate was 1,904 metric tons, compared with 2,036 metric tons in 1963. It is probable that the Cyclone and Drought Insurance Fund will be called upon to pay compensation in respect of the 1964 crop.

CANE VARIETIES

95. In order of importance, the main varieties making up the 1964 crop were the following: M. 147/44, E. 1/37, B. 37172 and M. 93/48. The above mentioned varieties accounted for about 66 per cent of the crop and the remaining 34 per cent was made up of M. 202/46, M. 134/32, B. 3337, M. 31/45 and M. 253/48.

QUOTAS AND PRICES

96. The negotiated price quota for the calendar year 1964 under the Commonwealth Sugar Agreement was 368,500 long tons at the negotiated price of £46.0.10d per ton, compared with the 1963 price of £46.0.10d per ton for 351,750 long tons. The remainder of the exportable sugars, amounting to 198,093 long tons were exported and sold on the free market, making the total sugar exported to 566,593 long tons. Local sales amounted to 27,616 long tons.

SUGAR EXPORTS

97. The exports of sugar were as follows:

<i>Destination</i>			<i>Long tons</i>
United Kingdom	...	...	416,723
Italy	...	...	9,989
Canada	...	...	134,881
Malaysia	...	...	5,000
			566,593

MOLASSES AND ALCOHOL

98. The production of molasses amounted to 113,910 metric tons. During the calendar year, 96,830 metric tons of molasses were exported; in the exports are included molasses carried over from the 1963 crop. About 8,000 tons of molasses were used in the manufacture of rum and various other alcoholic products and the balance was applied as fertilizer. The total production of alcohol, reduced to 100° G.L. was about 1,538,000 litres, the greater part of which was used locally as rum, denatured spirit and in the manufacture of vinegar. 26,700 litres were exported.

THE MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

99. The Institute continued to provide the research services for the industry and undertook extension work amongst the larger farmers. The Department of Agriculture was responsible for extension work amongst small cane farmers. Throughout the year, close liaison was maintained between the staff of both organisations and the research findings of the Institute were thus made fully available to the small farmer. The work of the Institute is fully recorded in its annual report.

THE SUGAR INDUSTRY REHABILITATION FUND

100. This fund, together with the Sugar Millers' Rehabilitation Fund and the Sugar Planters' Rehabilitation Fund, continued to serve the industry. The latter fund operated the Mechanical Pool and the Cane Nursery at Pointe aux Sables and, in co-operation with the industry, has commenced the establishment of subsidiary cane nurseries in certain factory areas. The nurseries supply disease-free planting material and cuttings of newly released varieties to planters while the Mechanical Pool supplies heavy tractors with equipment for the cleaning and de-stoning of land.

IX. Tea Industry

TEA CONTROL BOARD

101. The Board which was established under the Tea Industry Control Ordinance (Ordinance 29 of 1959) as amended by Ordinance 29 of 1961 and Ordinance 37 of 1963) held regular meetings throughout the year. It was mainly concerned with seeking alternative outlets for Mauritius tea although, in this respect, it received very little co-operation from manufacturers who seemed to prefer to continue sending their tea to the traditional London market; the formation of an Association of Tea Growers and Manufacturers and the centralised marketing of tea for local consumption. As in previous years, it continued to press for improvement in the standard of manufacture and also continued its "Drink More Tea" campaign launched last year with the co-operation of manufacturers.

STATISTICAL

102. The Socio-Economic Survey of Tea Plantations was published in June, 1964, as Sesional Paper No. 5 of 1964; the statistical review of the tea contractual year July, 1963, to June, 1964, was published in book form and the publication of quarterly statistical reports was continued.

MANAGING AGENCY

103. "La Chartreuse Tea Marketing Co-operative Society Ltd" continued to act as Government's Managing Agents in respect of Chartreuse Tea Factory and Midlands Tea Estate, this society being composed of planters established on Crown Land in the vicinity of the factory, under the Tea Development Project. During the course of the year, work was commenced on the extension of Chartreuse Tea Factory to raise its capacity from 750,000 lbs of made tea per annum to 1,500,000 lbs of made tea per annum. Leaf production of the Midlands Tea Estate was 1,009,626 lbs of green leaf compared with 1,283,065 lbs in 1963. The decrease was partly due to the effect of cyclone *Danielle* in January and partly to a strike of field labour in March, which strike lasted six days and was followed by a "go slow" movement during the remainder of March and April.

CLIMATE

104. Climatic conditions have not been favourable to leaf production. The year started with cyclone *Danielle* in the second half of January followed by an early commencement of the cold season, temperatures falling to unprecedented levels during the second half of June; the cold weather continued well into November. The last three months of the year were fairly dry and were therefore suitable for the clearing and preparation of land to be planted to tea. At the Tea Experiment Station, the rainfall for the year was 166.39 inches which was 26.08 inches in excess of the ten year average.

TEA FACTORIES

105. With the exception of Mare Anguilles Tea Factory, which still remained closed, all other factories continued in operation. The major reconstruction and development programme which was commenced last year at

Nouvelle France factory was completed. Bois Chéri and La Flora factories installed further withering troughs and Bois Chéri factory also installed new rolling room machinery comprising a rotorvane, triturator, C.T.C. machinery and a new dryer. As noted above, the extension of Chartreuse factory from three-quarter to one and a half million lbs made tea capacity was commenced. A new tea company, Tea Manufacturers (Sugar Millers) Ltd, was formed by the Sugar Industry to construct and operate on a non-profit basis three one million lbs made tea capacity factories in the Midlands area during the next 5 years. This will greatly assist Government by providing the factory capacity necessary for the tea small holders tea development project.

MAURITIAN TEA

106. Production fell by 186,358 lbs, from the record 3,256,891 lbs recorded last year to 3,070,533 lbs for the year under review. The fall in production, which occurred despite an increasing acreage under tea, was the result of cyclone *Danielle* and the generally unfavourable weather conditions prevailing during the year. As in previous years, approximately one third of the production was consumed locally, the remainder being exported. The price of Mauritian tea on the London market remained fairly steady. 14,271 chests of Mauritian tea were sold at the average price of 3shs 5. 35d a lb compared with 16,837 chests at 3shs 5.81d a lb in 1963. 192 chests were offered for sale at the Nairobi auctions and the sale of tea by private treaty continued on a limited scale.

DEVELOPMENT PROJECT

107. The Tea Development Project, which was started in 1956 was designed to develop 3,000 acres of new land under tea. As a result of representations from the participating planters in 1963, the scheme was extended for a further two years to June 1965 owing to the setbacks suffered during the cyclones of 1960 and subsequent cyclones. By the end of the year, planters on private land under the scheme had planted 212 acres and those on Crown Land 1,640 acres, Government having planted 289 acres as its contribution to the scheme. There was therefore a total of 2,141 acres planted under this project. As reported last year, 138 acres of the 289 acres planted by Government had been distributed as 33 smallholdings of about 5 acres each (4 acres of tea). The tenants of these holdings experienced considerable difficulty as they were unable to obtain short-term loans. In order to circumvent this difficulty, it was decided, with the tenants' agreement, to cancel the individual leases and to release the area in one block to a co-operative society for sub-leasing to the individual tenants, thereby enabling the tenants to obtain short-term loans from the Co-operative Central Bank.

NEW DEVELOPMENT PROJECT

108. Work proceeded satisfactorily on the new development project which envisaged the planting of 500 acres of tea per year by Government for distribution, when fully established, as smallholdings. By the end of the year, 1,865 acres had been contour surveyed, 1,615 acres cleared, 1,164 acres prepared for planting and 836 acres planted,

TEA SEED

109. 13,000 lbs of first grade tea seed were imported from Nyasaland and 15,000 lbs from Tanganyika. The harvest from local seed gardens was seriously affected by cyclone *Danielle*, only 3,245 lbs being harvested. As in previous years, the main source of local supply continued to be the 10-acre garden at Parc-aux-Cerfs. The new seed garden at Crown Land De Rauville, planted with selected plants of a broad leaf Assam type, continued to make satisfactory progress and should be a valuable addition to local supplies in a few years' time.

TEA EXPERIMENT STATION—WOOTON

110. Climatic conditions as already stated were not entirely favourable to leaf production. However, the green leaf harvested at Wooton during the tea crop 1963/64 (July to June) amounted to 239,700 lbs, which was only slightly below the previous year's harvest. The comparative yields of green leaf from the 70 acres in bearing at Wooton for the past three crop years are given below:

Month	1961-62 lbs	1962-63 lbs	1963-64 lbs
July	1,565	128	3,597
August	—	—	—
September	—	—	478
October	3,954	141	34,303
November	5,500	20,504	22,826
December	20,365	31,880	35,863
January	23,550	48,513	30,289
February	34,139	43,756	36,222
March	14,977	40,084	30,033
April	17,912	34,333	31,925
May	4,262	21,966	7,944
June	906	2,992	6,220
TOTAL	127,130	244,297	239,700

111. Yields in the first 6 months of the present season 1964-65 exceeded those of last season and give promise of a record crop.

112. The observation trials in respect of various rooting media for tea cuttings in the mist propagator indicated that a mixture 1:1:1 of rock sand, well rotted compost, and resinless sawdust gave the best results. However, in a single trial at the end of the year, "Verigro" vermiculite either alone or mixed equally with rock sand gave 100 per cent callusing within one month of planting.

113. From a monthly planting trial of cuttings from clone 1H in one rooting medium, it was observed that cuttings planted in the period November to April gave the greatest success, 67 per cent callusing in November to 100 per cent in April, while the percentage success for cuttings planted in June to September was very low.

114. A second green house to accommodate a further mist propagator is under construction as is a hardening off shed equipped with a "Mac Penny" weaning unit.

115. From experiments carried out on the early and late pruning of tea, it would seem that by some adjustment of the pruning season it is possible to markedly even up the crop curve.

116. Definite benefits in the way of increased crop would seem to result from the use of split applications of fertilizer in October and January compared with the usual single application in October.

117. Although it has been reported that tea seed planted with its eyes sideways gave better results than if planted eye down or up, a trial showed no difference in the rate of germination or the size of plants produced.

118. A weed control trial in nursery beds using black plastic mulch and *Simazine 50/W* showed the black plastic to give the best results; the *Simazine*, although controlling the weeds for 4-5 months, affected the tea seedlings.

119. Normal routine pruning, weeding, etc. was continued. Apart from the experiments noted above, work was continued on the following:

(a) *Long Term:*

1. Fertilizers
2. Pruning
3. Spacing

(b) *Short Term:*

1. Cultivation
2. Germinating tea seed
3. Fertilizer in tea nurseries

120. The number and acreage of the tea plantations were as follows:

Total number of plantations		...	...	444	
Aggregate area		...	...	...	Arpents
Area of mature plantations (approx.)		...	...	3,080	
Area in partial bearing (approx.)		...	...	2,000	
<i>Extent (Arpents)</i>		<i>Aggregate area (arpents)</i>	<i>% of Total area</i>	<i>No. of Plantations</i>	<i>Average size (arpents)</i>
0 less than 5	...	655.4	11.8	384	1.71
5 less than 25	...	247.4	4.4	27	9.16
25 less than 100	...	938.5	16.9	17	55.20
100 and above	...	3,721.1	66.9	16	232.6
TOTAL	...	5,562.4	100.0	444	12.53

The largest plantation under single management was 837 arpents; the second largest 522 arpents. There were 70 plantations of less than 1 arpent.

PRODUCTION

121. Mauritius produced 3,070,533 lbs of black tea in 1964. No green tea has been manufactured since 1956. The output of factories over five years was as follows:

<i>Factory</i>		<i>1960 lbs</i>	<i>1961 lbs</i>	<i>1962 lbs</i>	<i>1963 lbs</i>	<i>1964 lbs</i>
Bois Cheri	...	563,408	959,233	861,731	1,086,548	937,143
La Flora	...	527,050	689,829	774,650	806,447	839,524
Usine Corson	...	282,040	426,365	426,803	534,996	514,681
Pont Colville	...	116,141	235,423	237,793	291,190	241,495
Nouvelle France	...	188,127	208,310	148,620	105,713	226,921
Chartreuse	...	56,109	230,215	266,892	431,997	310,769
Mare Anguilles	...	—	59,659	83,138	—	—
TOTAL	...	1,732,875	2,809,034	2,799,627	3,256,891	3,070,533

122. The total export to all destinations was 1,725,178 lbs at a value of Rs 4,375,460 which compare with previous years as under:

<i>Destinations</i>	<i>1960 lbs</i>	<i>1961 lbs</i>	<i>1962 lbs</i>	<i>1963 lbs</i>	<i>1964 lbs</i>
United Kingdom ...	445,949	1,732,329	1,582,881	2,150,257	1,697,691
South Africa ...	10,505	2,443	977	6,482	6,158
New Zealand and Australia	—	426	—	—	—
Other Commonwealth countries ...	—	11,432	—	—	—
Madagascar and Reunion	2,156	210	—	1,841	3,688
Western Europe ...	5,920	—	5,358	—	—
United States of America...	—	—	—	16,902	—
Sevchelles ...	—	—	—	11	—
Comoro Islands ...	—	—	—	—	93
Kenya ...	—	—	—	—	17,548
TOTAL EXPORTS ...	464,530	1,746,840	1,589,216	2,175,493	1,725,178

123. Imports of tea were as follows:

<i>Country</i>	<i>1960 lbs</i>	<i>1961 lbs</i>	<i>1962 lbs</i>	<i>1963 lbs</i>	<i>1964 lbs</i>
China ...	7,781	7,327	10,190	8,668	11,130
Hong Kong ...	2,891	2,985	3,320	2,412	1,978
Ceylon ...	8,507	9,046	5,095	1,466	494
India ...	744	478	—	705	9
Formosa ...	—	—	—	736	—
United Kingdom ...	—	—	—	—	1,129
Kenya ...	—	—	—	—	8,129
Other countries ...	297	1,567	1,065	—	—
TOTAL ...	20,220	21,403	19,670	13,988	22,869

X. Tobacco Industry

124. Production of cured tobacco was limited to the estimated requirements of local cigarette manufacturers, British-American Tobacco Co. (Mauritius) Ltd. and Amalgamated Tobacco Corporation (Mauritius) Ltd. The Industry is controlled by a Board which publishes annually a full report on the industry.

CROP CONDITIONS

125. Weather conditions were favourable for the production of flue-cured Virginian and air-cured Amarello but less favourable for the production of Burley, the plantations having suffered intermittently from drought. The yield of leaf and the financial return to growers of flue-cured Virginian and air-cured Amarello were about the same as in the previous year. The growers of Burley obtained a lower yield and a smaller financial return than in 1963.

126. The incidence of spot diseases, Frog-eye and *Alternaria* was negligible. Root knot nematodes were observed in a few plantations. Some plantations of Virginia and Amarello in Black River, Pamplemousses and Flacq were affected by mosaic and a strain of potato virus Y. Slight attacks of mildew were reported at l'Etoile, Flacq, in the second season of the year.

127. Aphids were less abundant than in the previous year, while the incidence of caterpillars was about the same.

PERMITS

128. The number of permits issued for the planting of tobacco in 1964 compared with that of the previous year was as follows:

					1963 <i>Arpents</i>	1964 <i>Arpents</i>
Flue-cured Virginian	...	...	...	...	620	386
Air-cured Amarello	...	...	...	...	154	120
Burley	...	...	...	...	17	14
TOTAL	...	...	...	...	791	520

Permits for a smaller acreage were issued. The reduction in acreage was due mainly to the excess production over the quota in 1963. As a result, the allocations for production in 1964 have had to be curtailed by a corresponding amount in accordance with the long standing policy of the Board.

PRODUCTION

129. The production of tobacco in 1964 compared with 1963 was as follows:

					1963		1964	
					<i>Arpents</i>	<i>Kgs.</i>	<i>Arpents</i>	<i>Kgs.</i>
Flue-cured Virginian	...	...	...	...	615	307,678	382	192,192
Air-cured Amarello	...	...	...	...	152	166,508	116	127,273
Burley	...	...	...	...	17	9,122	13	5,437
TOTAL	...	...	...	...	784	483,308	511	324,902

YIELDS AND RETURNS

130. The yield of leaf and the financial return to growers of flue-cured Virginian and air-cured Amarello were about the same as in 1963, while the yield of leaf and the financial return to growers of Burley were lower than in 1963. Purchase prices remained unaltered.

					<i>Average yield per arpent</i>	
					1963	1964
					<i>Kgs.</i>	<i>Kgs.</i>
Flue-cured Virginian	...	...	...	...	500	503
Air-cured Amarello	...	...	...	...	1,095	1,097
Burley	...	...	...	...	536	418
					<i>Average return per arpent</i>	
					1963	1964
					<i>Rs</i>	<i>Rs</i>
Flue-cured Virginian	...	...	...	...	3,772	3,649
Air-cured Amarello	...	...	...	...	2,792	2,852
Burley	...	...	...	...	1,328	1,080
					<i>Average value per kilog</i>	
					1963	1964
					<i>Rs</i>	<i>Rs</i>
Flue-cured Virginian	...	...	...	...	7.55	7.25
Air-cured Amarello	...	...	...	...	2.55	2.60
Burley	...	...	...	...	2.47	2.58

QUALITY

131. The quality of the flue-cured and air-cured tobaccos produced was about the same as in the previous year.

		Percentage of Bright and Medium Grades				
		1960	1961	1962	1963	1964
Flue-cured	...	85	70	90	91	91
Air-cured	...	34	23	24	32	34

LOCAL MANUFACTURE

132. The manufacturers' purchases and usings of domestic and imported leaf were as follows:

1964—Purchases	Domestic		Total	% Total Imported	C.I.F. value per kg.	
	Kgs	Kgs			Imported Rs	Domestic Rs
B.A.T. Co. Mts. Ltd.	350,057	117,096	527,100	28.5	10.27	5.93
A.T.C. Mts. Ltd. ...	59,947					7.34
TOTAL	410,004	117,096	527,100	28.5	10.27	6.14

A.T.C. (Mauritius) Ltd. purchase mainly domestic flue-cured Virginian.

1964—Usings	Domestic		Total	% Total Imported	C.I.F. value per kg.	
	Kgs	Kgs			Imported Rs	Domestic Rs
B.A.T. Co. Mts. Ltd.	371,089	124,764	495,854	25.2	—	—
A.T.C. Mts. Ltd. ...	91,205	11,738	102,944	11.4	—	—
TOTAL	462,294	136,502	598,798	22.8	—	—

1963	Domestic		Total	% Total Imported	C.I.F. value per kg	
	Kgs	Kgs			Imported Rs	Domestic Rs
Purchases	410,347	104,253	550,600	34.2	10.16	7.31
Usings	457,728	120,739	578,467	20.8	—	—

133. The percentage of imported leaf used in manufacture increased by 2 per cent in 1964, as shown in the following table:

		Year						
		1958	1959	1960	1961	1962	1963	1964
% Imported	...	15.8	18.6	23.9	24.9	24.3	20.8	22.8

These figures indicate that, in spite of the improvement of the quality of domestic flue-cured Virginian, usings of imported leaf have increased slightly compared with the previous year.

134. The average C.I.F. value of imported Virginian leaf was Rs 10.27 per kilog compared with Rs 8.22 per kilog for domestic Virginian. The average values of air-cured Amarello and Burley, purchased by the manufacturers, were Rs 3.36 and Rs 3.34 per kilog respectively.

135. Domestic Virginian blended with imported leaf is used in the manufacture of "State Express Filter King 555", "De Luxe", "Matinée", "Vogue", "Embassy", "Soirée" and "Mills" brands of cigarettes which sell in competition with imported Virginian cigarettes.

IMPORTS

136. Imports of leaf and cigarettes for the last two years are tabulated below:

			1963		1964	
			Kgs	Value Rs	Kgs	Value Rs
Cigarettes	...	...	22,383	459,935	20,677	417,572
<i>Leaf:</i>						
Rhodesia	...	...	45,553	365,555	38,371	300,528
U.S.A.	...	...	94,700	1,059,790	78,725	902,474
TOTAL LEAF	...	...	140,253	1,425,345	117,096	1,203,002
GRAND TOTAL	...	...	162,636	1,885,280	138,773	1,620,574

137. Usings of domestic leaf and imported leaf have increased by 4,566.7 kgs and 15,764.3 kgs respectively compared with 1963, a net increase of 20,331 kgs. The percentage increase in usings of domestic leaf was 22.5 per cent as against an increase in usings of imported leaf of 77.5 per cent.

WAREHOUSE

138. The buildings were well maintained.

XI. Fibre Industry

139. The total production of Mauritius Hemp continued to be sold by the Mauritius Hemp Producers Syndicate to the Government Sack Factory for weaving into sacks to be used for the bagging of sugar and rice being purchased from Burma by Mauritius. Comparative statistics in connection with production were as follows:

			1963	1964
No. of factories operating	...	...	12	12
Fibre produced (metric tons)	...	...	1,349	1,206
Value (Rupees)	...	...	1,636,903	1,461,732
Area under aloe (arpents):				
Wild	...	...	2,840	2,755
Plantation	...	...	306	257

SACK FACTORY

140. This organisation was controlled by a Board which publishes annually a full report on its activities.

141. The factory purchased fibre produced locally and imported jute cuttings to the extent:

			1963	1964
			Kgs	Kgs
The carry over from 1963 was	...	Aloe :	1,348,959	1,206,750
		Jute :	308,465	198,446
The factory consumed	...	Aloe :	67,695	68,228
		Jute :	223,775	96,213
Excess in stock	...	Aloe :	1,408,581	1,206,237
		Jute :	209,490	324,008
Shortage in stock	...	Aloe :	533	12
		Jute :	193	163
Aloe fibre sold	...	—	110	231
		Aloe :	68,228	67,989
The carry over for the year was	...	Jute :	96,213	98,050

142. In 1964 the prices paid for fibre were as follows:

				<i>Price per ton</i>	
				1963	1964
				Rs c	Rs c
<i>Aloe Fibre :—</i>					
Very Good	...	...	...	1,300.00	1,300.00
Good	...	...	...	1,250.00	1,250.00
Fair	...	...	...	1,225.00	1,225.00
Tow	...	...	...	1,000.00	1,000.00
Sisal	...	...	...	1,250.00	—
Cuttings	...	...	...	900.00	900.00
Ropes	...	...	...	900.00	900.00
<i>Jute :—</i>					
Hearts	...	...	...	793.80	—
Cuttings	...	...	...	649.10	692.91

143. The average price payable for aloe fibre was Rs 1,200 per ton and this will be applicable until the 31st December, 1967, in accordance with the Tripartite Agreement which has been extended for a further year by the Sugar Millers, the Mauritius Hemp Producers Syndicate and the Government Sack Factory.

144. The factory's output for 1964 compared with that of 1963 was as follows:

				1963	1964
				Units	Units
Sacks (6×8) Aloe	...	...	...	794,597	593,909
Sacks (5×7) Aloe-Jute	...	...	...	705,524	832,912
Other sacks	...	...	...	34,383	30,950
				Yards	Yards
Filter Press Cloth...	...	...	...	27,990	18,464
Other Fabrics	...	...	...	1,745	4,073
				kgs	kgs
Yarn	...	...	...	17,334	16,458
Rope	...	...	...	8,376	9,071

145. In 1964, the Government Sack Factory operated at a loss of approximately Rs 638,000 compared with a net loss of Rs 569,951.91 in 1963. The reasons for this loss were as follows:

- The price paid for local fibre was an agreed price whereas the price at which sacks were sold was the world price at which imported sacks could be purchased in Mauritius or Burma;
- The factory purchased all grades of fibre produced locally thereby having to utilise the more expensive grades for the production of sacks, where cheaper grades of fibre could be equally well used;
- Owing to the smaller scale of operation, overheads were proportionately higher than in larger factories overseas;
- The cost of imported raw jute was higher than that paid by larger factories operating nearer sources of supply of jute.

XII. Livestock

MILCH CATTLE

146. The selection within the Creole breed was carried out on a limited scale pending the implementation of the change in the milch cattle breeding policy which was finalised towards the end of the year. It is expected that Friesian semen will be available to cowkeepers through the artificial insemination service in early 1965.

147. The two livestock breeding stations at Curepipe and Palmar carried a total of 284 head of stock of the Creole breed at the end of the year.

148. An average of 69 cows were in lactation during the year with a mean production of 6.83 kgs per head per diem. There were 85 calvings—45 males and 40 females. Fourteen heifers calved at an average age of 31 months. The average weight of the bull calves at birth was 32.2 kgs and that of heifer calves 28.3 kgs. Over a lactation period of 305 days, first calvers yielded 6 kgs, second calvers 7.14 kgs and third calvers 7.17 kgs of milk per head per diem. Cows with more than 3 calvings yielded 8.5 kgs of milk per head per day.

149. Twenty five Creole cows were transferred to Rodrigues.

HERD CATTLE

150. The livestock breeding station at Palmar carried 105 head of cattle of all ages of the Ongole breed and 59 head of cattle of all ages of the Boran breed.

151. There were 39 calvings among Ongoles of which 22 were bull calves. Two bulls were supplied to breeders.

152. The Borans continued to thrive. Fourteen calves were born, 9 males and 5 females. Two bulls were sold to breeders.

PIGS

153. To further improve the breeding stock two pedigree Large White boars were imported from the United Kingdom. The piggery carried an average of 33 animals of all ages of the Large White breed. There were 4 farrowings and on the average 9.5 piglets were born to each sow. Ten requests for breeding stock were met.

154. The pig breeding project has not made the expected impact on the pig population mainly due to the absence of efficient marketing facilities for pork and pork products.

GOATS

155. The herd of goats at the Palmar livestock breeding station comprised 50 Anglo-Nubian and 6 British Alpine. Three young Anglo-Nubian bucks were distributed to breeders. Six bucks of this breed were stationed at extension service district headquarters.

RABBITS

156. 86 rabbits of the Flenish Giant, Chinchilla and California White breeds, were transferred from Curepipe to Reduit in March. Forty-two animals were sold to breeders, seven were transferred to the Richelieu Rehabilitation Centre and four died.

POULTRY BREEDING CENTRE

157. The breeding programmes for the White Leghorn and Rhode Island Red stock were continued. The different strains were divided into lines. Ninety five per cent of the selected White Leghorn breeders laid 200 plus eggs to 500 days old.

158. The production of "404" hybrid chicks was continued. 14,545 "404" hybrid chicks were hatched; 7,664 pullets and 4,724 cockerels were sold to poultry keepers for egg and table poultry production respectively; the remaining 2,157 cockerels were reared for broiler production.

159. The breeding of the Broad Breasted Bronze turkeys at Palmar proved a failure. The hot climate rendered the males lazy and reduced the mating urge whilst the females proved to be terribly broody. Fertility was in consequence negligible.

EGG PRODUCTION

160. 142,194 eggs were produced at the poultry breeding centre, Reduit and 1,780 eggs at Curepipe. The monthly egg production of the various breeds at the poultry breeding centre was as follows:

Month	White Leghorn	Rhode Island Red	404 Parent Stock	Light Sussex	White Rock	Others	Total
January ...	5,154	2,188	2,178	1,135	55	604	11,314
February ...	4,186	976	3,436	377	147	744	9,866
March ...	3,884	802	4,210	—	155	1,625	10,676
April ...	3,345	865	2,937	—	373	1,600	9,120
May ...	2,825	788	2,223	—	554	1,750	8,140
June ...	2,543	702	2,776	510	804	1,618	8,953
July ...	3,054	798	5,084	671	1,441	1,394	12,442
August ...	3,368	703	4,277	660	1,652	1,592	12,252
September ...	3,187	636	3,114	512	1,656	1,905	11,110
October ...	1,577	436	1,980	206	1,450	7,923	13,572
November ...	1,180	317	1,980	—	1,389	10,813	15,679
December ...	7,604	356	2,407	—	830	7,873	19,070
TOTAL ...	41,907	9,567	36,802	4,071	10,406	39,441	142,194

161. Of the 143,974 eggs produced at the poultry breeding centre and Curepipe, 83,933 were sold as table eggs; 52,272 were incubated for the supply of chicks to the public, replacement stock and broiler production and 3,775 eggs were used for vaccine production.

REPRODUCTION PERFORMANCE

162. During the year under review, 29,326 chicks were hatched. Both the fertility and hatchability of all eggs set were not as good as last year; average fertility was 77 per cent compared with 82.9 per cent in 1963 and average hatchability was 56 per cent compared with 70 per cent. This fall in fertility and hatchability was thought to be mainly due to the unreliable service rendered by the air conditioning unit in the egg store, the undesirable effects being mostly felt during the hot months of February—May and November—December.

163. The monthly reproductive performance of all breeders was as follows:

Month				% Fertility	% Hatch- ability of all eggs set	% Hatch of Fertiles
January	...	...	...		no hatching	
February	...	...	...	69.2	44.4	68.2
March	...	...	...	75.3	46.9	62.4
April	...	...	...	74.5	57.3	77.1
May	...	...	...	69.0	47.0	70.0
June	...	...	...	80.9	59.3	74.9
July	...	...	...	82.2	61.4	74.9
August	...	...	...	80.4	59.8	65.7
September	...	...	...	76.2	55.7	73.2
October	...	...	...	68.7	50.0	72.9
November	...	...	...	67.7	54.8	81.0
December	...	...	...	68.0	40.1	59.1

164. As was the case in 1963, the "404" parent stock gave the best reproductive performance with an average fertility of 82.8 per cent, an average hatchability of fertiles of 81.1 per cent and an average hatchability of all eggs set of 66.6 per cent. The White Leghorn did well, the corresponding figures being 78.6 per cent, 69.0 per cent and 54.5 per cent respectively.

IMPORT OF NEW STOCK

165. In order to meet the increasing demand for "404" hybrid chicks, 1342 "404" day-old parent stock pullets and 395 "404" day-old parent stock cockerels were imported from Thornber Brothers. The same firm also supplied 312 "707" day-old parent stock pullets and 100 "707" day-old parent stock cockerels for the production of the "707" hybrid in 1965. For trial purposes, 240 day-old broiler hybrid parent stock pullets and 45 day-old broiler hybrid parent stock cockerels were imported from F. G. Sykes in the United Kingdom.

ACCOMMODATION AND EQUIPMENT

166. Three broiler houses, each measuring 100 ft by 30 ft were built. One 12,000 capacity incubator was received to increase incubator capacity to meet the demand for chicks.

ARTIFICIAL INSEMINATION AND VETERINARY AID SERVICES

167. In spite of the shortage of trained staff, 10,773 artificial inseminations were performed in pursuance of the policy to upgrade the local type of stock owned by peasant farmers by using selected bulls.

168. Over 1,229 pregnancy assessments were made, 93 cases of infertility were dealt with and 275 cases of difficult calving were successfully assisted.

LIVESTOCK CENSUS

169. A livestock census was carried out during the year; the results are shown at Appendices G to J.

XIII. Animal Health

170. The health of the stock at the various livestock and agricultural stations was on the whole good, thus providing optimum conditions for the successful implementation of the production programme.

171. The animal health picture of the island continued to be unique, in spite of the fact that a case of active Babesiosis, *Babesiosis bovis*, was encountered among the Madagascar cattle imported for slaughter and subsequently a solitary case of Babesiosis was found among herd animals on a south coast estate. A general survey carried out revealed that the herd cattle on the coast were already slightly infected, a state of premunity, consequently this has not presented a problem. This survey also revealed that Anaplasmosis, *Anoplasmosis Marginale*, was also present among herd animals. It must be added that, although previously no general blood survey was carried out, nevertheless spot checks on herd cattle did not reveal this picture.

CATTLE

172. As in 1963, no case of summer mastitis amongst the milch cattle at the breeding stations was recorded. The young stock continued to do well.

GOATS AND PIGS

173. The adult stock did well save one case of lameness amongst pigs encountered at Curepipe. The animal was killed and material was sent to the Region de Recherches Vétérinaires et Zootechniques de Madagascar for investigation for Teschen disease or other infectious disease with negative results.

POULTRY

174. The overall picture of the stock at the poultry breeding centre was satisfactory. Coccidiosis was negligible amongst chicks and growing stock at 1.5 per cent. 715 deaths occurred in the year amongst birds of all ages out of an average of 6,000 birds carried at the station at any one time. The average monthly mortality among adult stock, from all causes, was 2.5 per cent; amongst growers it was 2.2 per cent and from day-old to 12 weeks it was 1.5 per cent. Overall analysis of the 715 post mortems carried out was as follows:

Cause of death		percent of total	
		percent	percent
R. D. (Respiratory)	...	12.9	(1. 3)
Leucosis ...	...	20.6	(2. 2)
Encephalomyelitis	...	1.1	(. 12)
Deficiency Disease	...	11.5	(1. 2)
Coccidiosis...	...	1.7	(0. 2)
<i>Miscellaneous :</i>			
Injury ...	...	47.8 percent	
Egg Peritonitis	...		
Worm Parasitism etc.	...		

The figures in brackets represent the approximate incidence of the various diseases in the poultry population of the centre assuming an average population of 6,000 birds yearly over the last three years.

176. The major diseases affecting the stock were Leucosis complex and nutritional deficiency. Worm infestation was lower than the previous year due to a regular deworming programme. At one time C.R.D. caused much concern but out of 361 blood samples subjected to laboratory tests, only 2.2 per cent gave positive reactions indicating infection in carrier birds. Through the courtesy of the Department of Veterinary Services, Rhodesia, blood samples and eggs collected by their Avian Pathologist revealed only the presence of C.R.D., no evidence of Infectious Bronchitis was obtained. This organisation also accepted Mr. C. Gassin, the Poultry Officer, for a month's intensive training in poultry disease diagnosis.

RABBITS

177. The rabbitry was moved from the wet climate of Curepipe to Reduit. The general health of the stock improved and the rabbits have continued to thrive save for a few cases of snuffles amongst adult stock, which occurred soon after they were moved to Reduit.

LABORATORY SERVICES

178. A total of 1,167 post mortem examinations were carried out on large and small animals. In addition, 120 faecal examinations were carried out and 13 milk samples were subjected to bacterial examination. 109 parasitological examinations were made. 3,202 blood films were examined for the babesiosis survey.

179. The Laboratory produced the following vaccines:

<i>Type of Vaccine</i>				<i>Doses</i>
Newcastle Disease (live)	...	...	...	60,000
Newcastle Disease (inactivated)	...	...	...	120,000
Fowl Pox	...	...	...	108,000
Canine Distemper	...	...	...	5,800

180. Towards the end of the year, Dr. D. A. Mac Pherson, B.Sc., M.R.C.V.S., assumed control of the work of the animal health laboratory.

ANIMAL QUARANTINE SERVICE

181. The animal quarantine station at Roche Bois was completed. In compliance with the provisions of Animal Disease Ordinance, 1,062 import permits and 532 landing permits were issued. 15 aircraft and 61 ships carrying livestock or livestock products were cleared. All frozen meat landed was subjected to veterinary inspection prior to release. 69 certificates of veterinary health were issued in respect of the export of molasses and 40 veterinary certificates of health were issued in respect of the export of dogs, horses and birds.

182. 7,700 head of cattle, 7,282 from Madagascar and 418 from Rodrigues, were received into the Roche Bois quarantine station and were released for slaughter, after quarantine, to the Roche Bois, Rose Hill and Curepipe abattoirs. Nine dogs and three cats underwent quarantine at Reduit.

183. Six Friesian bulls, received from Australia in 1963, after quarantine were released, five were shipped to Rodrigues and one was retained temporarily in Mauritius.

IMPORTS OF LIVESTOCK PRODUCTS

184. The following table summarises the imports of livestock products including frozen meats, processed meats, offal, by-products of abattoirs and prepared livestock feeds:

Frozen beef and beef products	...	...	...	2,036,118½ lbs
Frozen mutton and offal	...	...	...	1,370,748 lbs
Frozen goat meat and offal	...	...	...	80,580 lbs
Frozen pork and pork products	...	...	...	282,151½ lbs
Frozen poultry	...	...	...	419,702½ lbs
Eggs	...	...	...	66,300 dozen
Frozen rabbits	...	...	...	269 lbs
Frozen turkeys, ducks and geese	...	...	...	6,583 lbs
Livestock feeds (poultry, cattle, pig and horse)	...	...	...	5,320,883 lbs
Meat and fish meal for livestock feeds	...	...	...	252,308 lbs
Bone meal for livestock feeds	...	...	...	45,340 lbs

185. The bulk of the imports of beef, mutton and goat meat were as frozen meat while in the case of pork, ham, bacon, sausages and packaged foods formed the bulk of the importations. Poultry feed comprised 97.7 per cent of the imports of livestock feeds.

TUBERCULIN TESTING

186. Owing to the shortage of professional staff, the annual tuberculin test was started late in the year. 2,025 head of herd cattle and 530 head of milch cattle were tested. There were 56 positive reactors in the herd cattle and one in milch cattle.

SLAUGHTER HOUSE CONTROL

187. The six slaughter houses were regularly inspected with a view to controlling meat inspection and abattoir hygiene. Under the Food Control Order, 2,973 cows of the milch breed were slaughtered compared with 4,010 cows in 1963. Slaughter permits were issued, both on quota, as well as on humane grounds, as and when required.

ADVISORY SERVICE

188. Apart from the field staff who advise stock owners on feeding and management problems, the senior staff of the veterinary services gave specialist advice to a large number of breeders.

REVENUE

189. The various services rendered to the public produced revenue of Rs 260,180.39, the main sources of which were:

<i>Service</i>	<i>Rs</i>
Sale of livestock, other than poultry	88,952.68
Sale of poultry, chicks, eggs etc.	85,225.26
Sale of vaccines and drugs	9,605.15
Quarantine fees	60,001.30
Veterinary fees	16,094.00
Miscellaneous	302.00
TOTAL	260,180.39

50TH ANNIVERSARY—VETERINARY SERVICES

190. On the 31st of October, the division of veterinary services of the Department of Agriculture celebrated its fiftieth anniversary. To celebrate the occasion, a bronze statue of a bull, which was presented by the Government of Western Australia, was unveiled by Dr. the Honourable S. Ramgoolam, Premier and Minister of Finance outside the animal health laboratory and the livestock station at Reduit was opened to the public for the day. Some 6,000 people visited the station.

VISIT BY THE ANIMAL HEALTH ADVISER

191. In October and early November, the Animal Health Adviser to the Ministry of Overseas Development, Mr. K. D. S. MacOwan, C.B.E., M.R.C.V.S., visited Mauritius with a view to studying and advising on the problems of the livestock industry and, in particular, to advise on the proposed change in the milch cattle breeding policy which he endorsed.

XIV. Land Settlement

192. During the year, the Land Settlement Committee held one meeting. It was an informal meeting as many members could not attend.

193. The tenants followed generally the advice given by officers of the Extension Service and, as a whole, the holdings were kept in a satisfactory condition. Yields of sugar-cane were below normal owing to adverse climatic conditions.

194. Rent collection was again very unsatisfactory. With a view to improving rent collection, it was decided to appoint a full time Clerical Officer as it is not advisable that Agricultural Officers should be at the same time advisers and rent collectors. Owing to staff shortage, it was impossible to appoint an officer before the end of the year.

195. At Terre Rouge, the construction of a masonry canal to replace an existing earth canal progressed satisfactorily, 1,500 feet of canal was constructed. Extensive repairs to existing canals were made and consequently the loss of irrigation water through leakage has been considerably reduced.

196. The tenants of Vale, La Cave, Belle Vue cultivated their holdings satisfactorily. Yields of foodcrops and vegetables at Vale and La Cave were adversely affected by drought during the period September—November.

197. At Palmar, a few areas are still in a derelict state due to a prolonged drought; the tenants concerned were unable to rehabilitate their holdings completely, although they were allowed to cultivate the whole area under sugar-cane.

198. Seventy seven holdings at Bee Manique were occupied. There was no extension of the scheme; farmers maintained their holdings satisfactorily.

199. At Plaisance, one hundred and thirty-one holdings were occupied. The tenants grew foodcrops and vegetables.

XV. Extension Services

VISITS TO PLANTATIONS

200. More than 8,300 individual field visits were paid to sugar-cane and vegetable growers and advice covering all aspects of the various crops grown was given. The importance of disease and pest control at the first sign of an outbreak was stressed and planters were informed of the precautions to be taken when using pesticides. Other important aspects of advisory work included the use of complete fertilizers with mode and time of application, the choice of varieties in relation to regions and the choice of crops and rotation in relation to disease and pest control.

DEMONSTRATION WORK

201. Thirty-one fertilizer demonstrations, on both sugar-cane and food-crops, were laid down and marked differences in yield were obtained in favour of complete fertilizers. One hundred and thirty-six demonstrations on the proper use of pesticides for the control of insect pests and fungicides for the control of plant diseases were likewise conducted on farmers' crops.

202. Sixty-four evening meetings of small farmers were convened throughout the island and problems of agricultural interest were discussed. Lectures on agricultural topics were delivered and these were accompanied by visual aids such as slides, live specimens, film strips and short films. The main subjects reviewed were:

- (a) The use of complete fertilizers in relation to those available on the market, time and method of application to sugar-cane and other crops;
- (b) Control of pests and diseases and precautions to be taken when using pesticides;
- (c) Potato cultivation, use of certified seed and preventive spraying against blight;
- (d) Better utilization of available land and soil conservation measures.

203. One notable feature of the year's work, was the institution of a series of evening meetings, at weekly intervals, for invited planters at demonstration centres. Three series of four lectures each on sugar-cane growing were given at Central Flacq, Plaisance and Arsenal. About 2,500 leaflets and 1,000 pamphlets were distributed during these meetings.

PROPAGATION AND DISTRIBUTION OF CANE VARIETIES

204. 7,567 canes of the commercial varieties M. 93/48, M. 202/46 and M. 31/45 were sold to small cane growers from the propagation plots on the various demonstration centres. In addition, the Sugar Planters' Rehabilitation Fund nurseries distributed 4,114 tons of planting material to cane farmers.

PESTS AND DISEASES

205. Late Blight was the most important disease affecting potatoes and cooking tomatoes. The disease was particularly troublesome in the wet up-lands. The price of cooking tomatoes was quite low at one period and growers were unwilling to apply control measures. Bacterial wilt likewise resulted in the loss of an appreciable amount of cooking tomatoes and potatoes.

206. The following insect pests were of common occurrence on farms: red spiders, fruit flies, tomato borers, thrips and aphids. The potato tuber moth was particularly troublesome in the Black River area and caused some losses.

207. In June, 1964, the Mauritius Sugar Industry Research Institute reported that a new strain of the organism causing gummosis in sugar-cane existed in the country. A preliminary survey showed that there were two main centres of infection, one at Ferney and the other at Clemencia. It was noticed that the disease was widely disseminated and that 70 per cent of the commercial varieties under cultivation were susceptible to the disease in varying degrees. The two cyclones that occurred at the beginning of the year and an unduly cold and wet winter provided ideal conditions for the spread and development of the disease. The most susceptible varieties were M.147/44, B.34104, B.3337, B.37172 and E.1/37 whereas a high degree of resistance was shown by M.134/32, M.31/45, M.202/46, M.253/48 and E.50/47. Immediate steps were taken to counter the adverse effects of the disease on production by advising farmers to replace susceptible varieties by resistant ones. Proclamation No. 22 of 1964 was issued. It stated that planting material of the varieties M.147/44, B. 3337 and B.34104 should not be used either for planting or replanting after the 30th June, 1965. The proclamation also requires uprooting and destruction of any sugar-cane of the above mentioned varieties on or before the 31st December, 1970.

FOODCROP GROWING IN CANE INTERROWS

208. Inter-cropping of virgin cane interlines with potatoes, cooking tomatoes, groundnuts, beans remained a current practice with small growers. The trend of more potatoes in sugar-cane interlines which commenced in 1961 and, with the seed potato subsidy, continued and in certain localities was extended even to ratoon interlines, although the latter practice was not widespread.

PERMANENT DISTRICT DEMONSTRATION PLOTS

209. To satisfy the demand of planters for planting material, a substantial acreage of the demonstration plots was devoted to the cultivation of bananas, pineapples, manioc and sweet potatoes. A new variety of sugar-cane, M.442/51, was planted for eventual distribution of canes to small planters.

ARSENAL DEMONSTRATION PLOT

210. 11,130 kgs of foodstuffs were produced, 500 canes of the variety M.31/45 were distributed to cane growers and 6,410 kgs of canes were sent for milling. Some 3 perches of the new cane variety M.442/51 were planted and will be intensely propagated for distribution to cane growers.

MAPOU DEMONSTRATION PLOT

211. 4,589 kgs of foodstuffs were produced and 4,040 kgs of canes were sent for milling. A large number of rough lemon seedlings were planted for budding for oranges. Vegetable seeds and fruit trees were on sale to the public.

VACOAS DEMONSTRATION PLOT

212. Vegetable and foodcrops were intensely cultivated and some 16,000 kgs of foodstuffs were produced. Cyclone *Danielle* and the dry season at the end of the year caused a reduction in production compared with 1963.

RIVIÈRE DES ANGUILLES DEMONSTRATION PLOT

213. 7,804 kgs of foodstuffs were produced and 1,400 canes of the new commercial varieties were distributed as planting material to small growers. 6,060 kgs of canes were sent for milling. The cow at the station calved. One calf and one buck were sold to breeders. Three Anglo-Nubian does were introduced from Palmar Livestock Breeding Station. Seeds and plants were on sale and planting material such as sweet potato and manioc were supplied to growers free of charge.

CENTRE DE FLACQ DEMONSTRATION PLOT

214. 5,637 kgs of foodstuffs were produced and 3,942 cane cuttings were distributed to small cane planters. 3 Anglo-Nubian cross female goats were introduced on the station which later gave birth to 5 kids. The cow calved. The river reserve was cleared of its wild vegetation and planted under fruit trees; pangola was planted to prevent erosion and provided fodder for the animals.

PLAISANCE DEMONSTRATION PLOT

215. 7,993 kgs of foodstuffs were produced. 1,725 canes of the new varieties were distributed to small planters. 6,700 kgs of canes were sent for milling. One Anglo-Nubian buck, one doe and some 17 pairs of rabbits were sold to breeders. Seeds and plants were on sale.

ASSISTANCE TO SMALL GROWERS

216. Vegetable seeds were issued free to *bona fide* vegetable growers whose plantations were damaged by cyclone *Danielle*. About 659 vegetable growers availed themselves of the assistance and, as a result, there was a good supply of fresh vegetable on the market as soon as possible after the cyclone.

AGRICULTURAL TRAINING IN PRIMARY SCHOOLS

217. Of the fourteen schools, selected in 1963, in which vegetable gardening would be undertaken, only ten were in operation during 1964. Lack of fencing prevented work being carried out at the Long Mountain, Terre Rouge and Goodlands schools while at Sebastopol, the garden area

was used to extend the school building. Advice, demonstrations and assistance in the form of seeds, pesticides and in some cases, fertilizers were given to the following schools:

District	School
Pamplemousses	Mont Gout
Rivière du Rempart	Rivière du Rempart
Savanne	Chemin Grenier
	Rivière des Anguilles
Grand Port	L'Escalier
	Rose Belle
Plaines Wilhems	Highlands
	Belle Rose R.C.A.
Flacq	Camp Ithier
	Grand River South East

CONTROL OF SOIL EROSION

218. Some 5 arpents of steep land were contour-staked for sugar-cane planting. Contour planting of sugar-cane is now an established practice.

LIAISON WITH THE MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

219. The close contact established between officers of the Extension Service and those of the Mauritius Sugar Industry Research Institute was maintained throughout the year. The following lectures delivered by officers of the Institute were attended by Extension Officers:

Date	Lecturer	Subject
17. 2.64 ...	P. Halais ...	Fertilization problems
15. 3.64 ...	R. Antoine ...	Cane diseases
20. 4.64 ...	E. F. George ...	Cane varieties
27. 4.64 ...	R. Antoine ...	Yellow spot
4. 5.64 ...	Professor H. Bruni- che-Olsen ...	Diffusion de la canne et de son application en sucrierie
22. 6.64 ...	G. Rouillard ...	Cane cultivation
9. 7.64 ...	Dr. P. O. Wiehe R. Antoine ...	Une nouvelle apparition de la maladie de la gomme à Maurice
20. 7.64 ...	J. R. de R. St. Antoine	Sucrose content of canes
21. 9.64 ...	D. H. Parish	Fertilization
19.10.64 ...	E. Rochecouste	Herbicides
23.11.64 ...	J. R. Williams	Insect Pests

RADIO TALK

220. A broadcast talk was given by the Plant Pathologist on "Le contrôle phytosanitaire des importations".

MISCELLANEOUS ACTIVITIES

221. The "Produce More Food" campaign was extended to the villages of Camp Ithier, Laventure, Espérance and Quartier Militaire during the second half of the year. Efforts were mainly directed towards the growing of fruit trees and the raising of chicks in the following villages: Case Noyale, Bambous, Montagne Blanche, Bel Air Rivière Sèche, Morcellement St. André, Pointe aux Piments, Belle Vue Maurel, L'Espérance Trébuchet, Mare d'Albert, Escalier, Bois Chéri, Stanley, Bassin Road, Camp Diabie, Brisée Verdière and Saint Pierre. Local Committees met at regular intervals and weekly visits were paid by Extension Officers.

222. Fruit trees were also delivered to youth clubs and other organisations; some 1,200 fruit trees of various types and 650 chicks were distributed. Planting material of sweet potatoes, manioc, acacia, bananas, pine apples, and fodder grasses were given on request free of charge. Five Anglo-Nubian goats were sold to farmers for the improvement of the local breed of goats. Eight young bulis and three male goats were castrated for meat production. Fruit trees, delivered at the beginning of the campaign in 1961 and 1962, started to fruit. Two arpents of river reserves, under the control of small farmers, were planted with fruit trees and pangola grass.

223. A number of lectures and demonstrations were arranged for the benefit of Young Farmers' Clubs and Youth Clubs and facilities for obtaining fruit trees and planting material of various types were extended to their members.

224. Nine silo pits were filled with cane tops, of which one at Benarès with a capacity of twenty-two tons, was constructed during the year. Several silo pits, that had been constructed with the help of cowkeepers, could not be filled as their owners were no longer interested in silage because they had sold their animals. The silage produced during the year was of good quality and was readily eaten by the animals to whom it was fed.

225. The timely control of pests and diseases for obtaining good crops has been so successfully demonstrated in the past that most planters have acquired spraying equipment. As a result there has been practically no request for assistance from the spraying unit originally set up to demonstrate the value of pest and disease control on the potato crop.

226. Under the Certified Seed Potato Subsidy Scheme, registration of potato growers was carried out throughout the island. 1,632 permits were issued and 731 tons of certified potato seed were allocated. About 1,000 arpents of land, on which planters proposed to grow potatoes were visited prior to delivery of permits and, after delivery, to ascertain that the seeds had been planted. The demand for permits could not be met and many planters had to secure seed outside the scheme. It was estimated that about 1,200 arpents were planted to potatoes during the year. The average yield was just under 5 tons per arpent; the later plantings suffered from drought to an appreciable extent in a few localities. The price obtained on the market was rather low; the Agricultural Marketing Board guaranteed a price of Rs 340 per ton for first grade ware potatoes.

227. Various surveys were conducted during the year including:

1. Assessment of Crown Land for rental value and suitability for agricultural development
2. An island wide preliminary survey to assess the distribution of Gumming disease of the sugar-cane;
3. Assessment of damage done to crops as a result of the indiscriminate use of herbicides;
4. Investigation of fodder problems;
5. Collection of statistical data for foodcrops being harvested;
6. Assessment of potatoes and onions being harvested for the Agricultural Marketing Board;
7. Weekly recording of market prices for vegetables;
8. Estimation of the annual foodcrop and fruit harvest.

XVI. Fooderops

228. The following tables were prepared from data collected by the Extension Service:

AREA HARVESTED (ARPENTS)

Year	Maize	Mantio	Arouilles	Sweet Potatoes	Groundnuts	Irish Potatoes	Beans & Peas	Pineapple	Brinjal	Tomatoes	Ginger	Cucumbers	Mixed Vegetables	Bananas	Total
1963	...	271	149	150	353	928	817	103	327	2,354	114	1,305	1,441	1	8,446
1964	...	60	50	91	317	1,210	577	118	264	2,171	82	1,403	1,459	582	8,364
ESTIMATED AVERAGE YIELD (KGS / ARPENT)															
1963	...	543	4,053	4,622	1,263	5,376	865	4,073	5,986	2,421	6,471	7,418	7,171	—	—
1964	...	432	4,000	4,407	1,608	4,900	889	3,500	4,534	2,513	5,725	4,483	4,311	5,151	—
ESTIMATED TOTAL COMMERCIAL PRODUCTION (METRIC TONS)															
1963	...	147	606	693	446	4,989	706	420	1,937	5,698	738	9,681	10,335	—	37,118
1964	...	25	200	401	509	5,930	513	413	1,197	5,456	469	6,304	6,290	2,998	31,171

The area shown above was effective acreage and includes the aggregate acreages of different crops grown on the same land in one year, as well as fooderops interplanted with sugar-cane.

XVII. Experiment Stations

CUREPIPE EXPERIMENT STATION

Development

229. Existing roads on the station were improved and new roads totaling 860 feet by 12 feet wide were built. The road verges were planted under grass as an anti-erosion measure. The fencing of the station was completed. The construction of a fertilizer and tool store was commenced.

FODDER

230. Of the grass varieties, Selected *Setaria*, Giant Rhodes, and Elephant grass (broad leaf type) planted in September, 1961, *Setaria* was the best yielder followed by Elephant grass (broad leaf type).

Grass	Yield during 1964 (6 cuts) per acre of fresh material
Selected <i>Setaria</i>	25.7
Elephant grass (broad leaf type) ...	23.4
Giant Rhodes	16.5

231. A fertilizer trial on *Setaria* with two rates of Nitrogen of 40 and 80 lbs N/acre, applied after each cut, in the form of sulphate of ammonia, combined with annual applications of:

(a) 20 lbs K_2O /acre as Sulphate of Potash plus 20 lbs P_2O_5 /acre as single superphosphate;

(b) 40 lbs K_2O /acre plus 40 lbs P_2O_5 /acre;

showed no response to Nitrogen at the lower rates of K_2O and P_2O_5 and a slight response at the higher rate. However, the yield increase was higher at the higher rates of N, P_2O_5 and K_2O compared to the lower rates.

232. An experiment with eight selected strains of *Setaria*, planted in November 1963, gave the following yields up to 18.12.64 in 7 cuts, the first made on 31.12.63:

<i>Setaria</i> strain No. ...	6	2	1	3	5	4	7	8
Yield tons fresh weight/acre ...	75.6	74.1	72.1	69.2	68.2	67.0	64.1	59.5

Significant difference between strains:

L.S.D. $P=.05: \pm 9.73$ tons per acre

L.S.D. $P=.01: \pm 13.15$ tons per acre

233. An experiment with five strains of Elephant grass, planted in May 1963, gave the following yields in 7 cuts between October 1963 and October 1964:

	<i>Curepipe</i> Strain	<i>Reduit</i> Strain	<i>Reduit</i> Strain	<i>Reduit</i> Strain	<i>Reduit</i> Strain
Yield tons fresh Wt/acre ...	75.5	71.9	63.4	58.7	57.2

Significant difference between strains:

L.S.D. $P=.05: \pm 13.6$ tons per acre

L.S.D. $P=.01: \pm 19.04$ tons per acre

234. Strains Nos. 1—12 of Giant Rhodes grass, selected at the central experiment station, Reduit were planted in observation plots in August 1964. Other introductions at the station were the legumes *Desmodium intortum* and *Sivatro*. Some $2\frac{1}{2}$ acres of *Setaria* had been planted and a further 7 acres ploughed for planting in early 1965.

ORCHARD CROPS

235. The citrus plants which were planted in 1958 and 1959, though appreciably affected by cyclone *Danielle*, recovered satisfactorily. Ten local mandarin plants fruited. Of the orange trees, only Valencia fruited as well as two grape fruit plants and two plants of *Djeroek Keprok Poenten* Mandarin. One apple plant of the variety Tropical Beauty, planted in June, 1962, fruited. It was clear from the results obtained with pineapples that this crop is not suited to the Curepipe area. The Guava orchard fruited well and fruit was sent to Barkly experiment station for propagation.

FOODCROPS

236. A fertilizer and a spacing trial with "Arouille Carri", *Colacasia esculenta*, was planted in February, 1964. A fertilizer trial was also laid down in August, 1964, with "Arouille Violette".

237. In May, 1963, a trial was laid down with "Arouille Violette" using 2 types of planting material, namely germinated tubers and heads of mother plants and was harvested in February, 1964. Yields were respectively 7.47 tons and 8.72 tons.

238. The potato crops planted in April, August and October, were all severely affected by blight and gave very poor yields. In a variety trial, planted in August and in which blight was prevalent to a high degree, the following varieties showed fair resistance: Rosaline, Sesamus, Susanna, Spartan in descending order of merit. Varieties Pimpernel and BP were less resistant. The fungicides Maneb and M 45 gave better protection than Zineb but there was no difference in the protection offered between Maneb and M 45.

239. A ginger fertilizer trial, laid down in October, 1963, was harvested in July, 1964. There was an heavy infestation of nematodes and the yields obtained were very poor.

240. Winter vegetables were again produced in the summer months thus confirming the previous findings that, in the upland areas, it is possible to produce winter vegetables into the summer.

241. Squash, pumpkin, chinese kale and various other vegetables were grown for seed production.

LIVESTOCK

242. The flocks of duck and geese living in association with fish in the fresh water fish ponds were maintained. The peacock and black swans continued to attract the attention of visitors. The poultry houses were utilised by the poultry section of the Veterinary Services.

PLAISANCE DEMONSTRATION PLOT

Orchard Section

243. 8A90 of the station were planted with fruit trees and the approximate area allocated to each was as follows:

			Area (arparts)	Planting distance	Date planted
Citrus plants	...	...	2.70	25' × 25'	June, 1961
Coconuts :					June, 1962
(a) Malayan dwarf	...	...	1.70	20' × 20'	March, 1963
(b) Pemba	...	...	1.00	20' × 20'	March, 1963
Litchi	...	...	2.50	35' × 35'	March, 1963
Avocado pears	...	...	0.25	20' × 20'	February, 1962
Grape	...	...	0.75		February, 1964
TOTAL	...	...	8.90		

The growth of all fruit trees continued to show promise. The citrus plants have started bearing, those planted in June, 1961, gave a good crop in 1964. The area between the fruit trees was planted with vegetables for seed production and in one field of citrus was interplanted with pineapples. The long term fertilizer trials on citrus and coconuts were continued.

AIRPORT SECTION

244. In the airport area some 31 acres of land were planted under fodder crops. During the year, some 6 acres of this area were bulldozed for the extension of the airport runway. About 7 acres of new land were planted. The areas under the different grasses were as follows:

				Grass	Acres
Setaria	...	...	...	...	12
Elephant grass	...	...	...	...	4
Acacia	...	...	...	...	16
TOTAL	...	...	...	...	32

In November, another 20 acres of land in the airport area were planted to various grasses after clearing and levelling.

245. The fodder obtained was utilised at the Curepipe livestock breeding centre to supplement that obtained from the Curepipe experiment station, the requirement of the centre being 5 tons per day.

Mango Section

246. A mango orchard, consisting mainly of variety "Maison Rouge" with a few "Baissac" and "Dauphine" seedling plants and of an area of about 4½ acres was taken over in January, 1962. The area was fenced and the orchard thinned out as it was overcrowded. The above operation, followed by regular fertilising, gave good results. Throughout the flowering season, anthracnose was present and, in spite of frequent sprayings with captan, many inflorescences were prevented from setting fruit. A fair crop was harvested. After the seed requirements of Barkly experiment station and Rodrigues were met for propagation, the balance of the crop was sold by auction for Rs 1,000.

CENTRAL EXPERIMENT STATION

Development

247. An irrigation main, consisting of a 4" cast iron pipe was laid underground in the 10 acres of new land recently transferred to the station from Le Reduit. Four hydrants have been fixed at intervals of 120' and the area was fenced.

Orchard Crops

248. The fertilizer experiment on both young and old citrus was continued. Routine maintenance work such as weeding, application of fertilizers, insecticides and fungicides, in the experimental and non experimental plots was carried out. Cyclones resulted in a 50 per cent fruit drop.

249. A small pineapple plot, consisting of varieties Smooth Cayenne and Victoria, was maintained. The collection of the nine varieties of banana was severely hit by cyclone *Danielle*, the plants recovered later in the year.

250. Varieties of peach, introduced in 1963, continued under observation. The plants flowered in October, 1964, but fruits were not set. Persimon, except for some casualties, grew satisfactorily. The plants are deciduous; in winter, the leaves are shed and new shoots appear in October.

251. Pawpaws suffered from cyclone *Danielle*. The two varieties considered suitable for the production of crystallised pawpaw fruited.

252. An avocado pear orchard was established and the area will be extended as new grafted varieties become available. The resistant *Coffea arabica* varieties from Kenya continued to show promise.

GRASS AND FODDER

253. The phosphatic fertilizer trial on Rhodes grass showed no response to phosphate. The rapid growth of *Artemisia* or "Herbe Chinoise" in plots of Pangola grass treated with different rates of N greatly interfered with yields. The stool selection of *Setaria splendida* has been multiplied for planting at the Curepipe experiment station and central experiment station, Reduit.

254. In a variety trial, the imported varieties of Acacia proved superior to the local Acacia in leafiness and yield. Yields were as follows:

Variety				lbs/plot/cut average	lbs acre
Peru	...	...	...	202.4	29,388
Guatemala	...	...	...	191.4	27,791
Bald Hills	...	...	...	176.4	25,613
El Salvador	...	...	...	162.1	23,537
Local	...	...	...	125.8	18,226
Hawaii	...	...	...	121.0	17,424

L.S.D.P = .05 $\pm$ 20.3 lbs

L.S.D.P = .01 $\pm$ 28.1 lbs

255. The acacia was planted in hedges 10 feet apart and 30 feet long. The yield per acre, an average of 5 cuts from 29.1.64 to 25.11.64 although comparative was not truly representative of a regular plantation where hedges would be 5 feet apart.

256. The interplanting of legumes, such as Kudzu, *Lotononis*, *Siratro*, and *Desmodium intortum*, with grasses, such as Elephant grass, Giant Rhodes, Slender Guinea and *Digitaria pentzii* shows that only *Desmodium intortum* is successful with some of the grasses. All other legumes did not germinate or did not shoot when sown or planted. *Desmodium* swamped Pangola completely. It grows well with Slender Guinea, fairly well in Elephant grass planted 3 feet apart and is choked by Giant Rhodes grass.

FOODCROPS

257. The manioc variety trial again failed, on this occasion because of drought conditions prevailing at the time of planting. The collection of twenty-two varieties will have to be replanted.

258. Sweet potato varieties were planted in a varietal collection plot. A spacing trial on sweet potatoes was laid down.

259. A groundnut variety trial was laid down to assess yield during winter cropping. All varieties performed very poorly. The crop was severely attacked by a fungus causing wilt. All the imported varieties showed resistance to *Cercospora* and Chocolate spots in sharp contrast to the local, which is markedly susceptible.

260. A NPK trial on ginger and a lifting stage trial failed because of drought conditions. The ginger crop also suffered from die back, the cause of which was attributed to scales and nematodes. Oven-dried samples cleaned and roughly peeled were sent to the Tropical Products Institute for assessment of quality.

261. A maize variety trial, grown from mid March to the end of August, gave the following yields of air-dry grain:

Variety				lbs/acre
H 501	...	...	...	4,365
Local	...	...	...	4,205
H 507	...	...	...	3,904
H 503	...	...	...	3,594
H 502	...	...	...	3,487
V 520 C	...	...	...	3,487
Reunion Selected	...	...	...	2,955
L.S.D. P = .05: $\pm$ 753 lbs/acre				
L.S.D. P = .01: $\pm$ 1,005 lbs/acre				

H 501 and the other H varieties were imported from Mexico. Two varieties, imported from Queensland, failed to germinate.

ONIONS

262. Seedlings were raised at Barkly Experiment Station, Abercrombie Nursery, Plaisance and Palmar. Transplants of various varieties were tried at Palmar. Early Lockyer White and Early Lockyer Brown gave poor yields. Early Grano, Texas, Hunter, River White appear to be very promising. Apart from the local variety, Bombay Large Red and Poona Red Round flowered.

BARKLY EXPERIMENT STATION

Development

263. An electric pump was installed so as to irrigate the new area of 8 acres which was taken over by the station from the Prisons Department. The laying of mains and hydrants for irrigation was completed. An additional store, abutting the seed store of the main building was added because of the increasing production of vegetable seeds. 34 acres were fenced with chain link. A "Mac Penny" mist propagator was installed in the greenhouse built last year. This equipment should increase the output of plants, propagated by cuttings, by about twenty thousand.

Seed Production

264. About 28,000 lbs of vegetable seeds were produced during the period under review. A total of 51 acres of land was used for seed production out of which 32 acres were at Barkly and the rest on other experiment stations.

265. The value of plants and seeds sold and issued free to government institutions over the last three years are tabulated below:

		1962	1963	1964
		Rs	Rs	Rs
Sale of seeds	...	40,118.00	27,796.55	34,727.91
Sale of plants	...	14,932.00	28,128.73	30,184.06
TOTAL	...	55,050.00	55,925.28	64,911.97

The revenue for 1964 includes a sum of Rs 3,784 representing the value of seeds that were issued as cyclone relief to vegetable growers.

Citrus

266. 4,000 rough lemon stocks were budded with Washington Navel, Valencia, Parson's Brown and Navalencia oranges and mandarines. 2,500 budded citrus plants, budded last year, were released for sale to the public. Five pounds of Florida Rough Lemon seeds were sown to provide stocks for the next season.

Coconuts

267. 5,000 Malayan dwarf coconuts were imported from Singapore and were sown at Barkly. Seedlings are now being sold to the public.

Other orchard crops

268. For the first time since cyclone *Carol*, the litchi orchard at Barkly produced a fairly large crop which was sold by auction for a sum of Rs 2,400.

269. The Tropical Beauty apple, which was imported from Australia two years ago, commenced to bear fruit.

270. The peach varieties ordered from South Africa last year grew well. A dozen stocks were top-worked with the following acclimatised peach varieties: Hall's yellow, Angel, Alexander Jewel and Teton de Venus. Budwood of these varieties were obtained through the courtesy of the Manager of Nouvelle Industrie S.E.

Vegetables

271. This year vegetable strains imported from Burpee and dwarf bean varieties from Reunion Island were grown at Barkly. A few acclimatised strains of chillies and brinjal obtained from growers were also planted.

ABERCROMBIE NURSERY

272. The grape variety "Napoleon Chasselas" imported from Réunion in 1961, yielded a record crop of 200 bunches weighing on average 1 lb each, equivalent to a yield of 23,000 lbs per acre. About 300 plants of this variety of grapes were propagated and will be available for sale to the public. The mango orchard continued to flourish and the following varieties yielded a small crop of fruits: Eugenie, Auguste, Rosat, Baissac and Aristide.

ROYAL BOTANICAL GARDENS

273. The popularity of the gardens continued. It was estimated that about 127,000 people visited the gardens during the year. A large number of plants was propagated in the nursery and were transferred to Abercrombie and Barkly stations for sale to the public.

274. The gardens were well maintained and roads and walls repaired. Six new kiosks were built; gaps in the palm avenues; due to the recent cyclones, were filled. The site of the old labourers camp was reclaimed and is being grassed down, thereby increasing the area of the gardens by about one acre.

RICHELIEU EXPERIMENT STATION

Development

275. Work was continued on reclaiming 40 acres of land formerly under aloe fibre. Heavy implements of the Sugar Planters' Mechanical Pool were used to clear the land of surface stones, boulders and stone outcrops. By the end of the year, 20 acres had been cleared and graded terraces had been constructed. Another 10 acres remained to be cleared and terraced, the remainder will be occupied by windbreaks, drains, one quarter for watchmen and a dwelling for an experimental peasant farm. The final preparation of the terraces was carried out by the station tractors and implements.

276. Irrigation equipment, comprising an asbestos cement pressure main feeder 4,800 feet in length and a portable sprinkler system was ordered from Israel and is expected early in 1965. The sprinkler system will be sufficient to water over 3 acres in one position. It is proposed to carry out overhead irrigation by night as it is usually too windy during the day in dry weather. The rate of application of water will be 0.2" per hour and one application should normally last 13 hours starting from six o'clock in the afternoon.

Tobacco

277. Methyl Bromide, which has proved to be the most efficient and the cheapest soil sterilant for work in plant propagation at Richelieu, was used to treat a number of tobacco seeds beds for growers in Black River, Pamplemousses and Rivière du Rempart. The applications were carried out by the staff of the Entomology Division and by the inspectors of the Tobacco Board. Very good control of soil pests; diseases and weeds, including the troublesome 'onion grass' *typerus rotundus* was obtained.

Release of New Varieties

278. The three flue-cured varieties released last year, namely Vesta 30, NC 73 and Cokers 187 showed promise as to yield, quality and resistance to disease. Other varieties, bred at the station from introduced United States varieties, may be released in the near future.

279. The variety Burley 11B was again tried by a number of small tobacco growers. The Tobacco Board issued permits for the production of 10 tons of this variety. Yields averaged 1,300 lbs per acre. This is a fair yield under the dry conditions which prevailed in some areas. The plantations of the small growers were not irrigated. The variety Amarello is still the favourite variety with air-curers; it has become well established and is more resistant to drought than Burley. However, the Burley produces a better type of air-cured tobacco than Amarello.

Seed Beds

280. An experiment in which polythene sheets were used to activate the growth of tobacco seedlings on seed beds was successful: germination was more rapid, more uniform and early seedlings of very even size were obtained. The polythene sheets were supported over the beds by a wire running along the centre of the bed at a height of 12 inches and were fastened by wooden pegs along the perimeter of the bed. The ends of the tents so formed must be left open to allow free movement of air, otherwise the temperature would rise rapidly and the seedlings would be destroyed. The polythene sheets were removed partially in the morning and afternoons for watering by hand or with sprinklers.

281. A plastic mulch, manufactured by a local firm, with bitumen and other ingredients, was applied on tobacco seed beds in another experiment. The material was diluted with its own volume of water and sprayed on the bed surface after the seed had been sown and the bed well watered. It was expected that the mulch would conserve moisture. No beneficial effect was obtained. With a grass mulch, it was possible to reduce the number of waterings to two per day, one in the morning and the other in the afternoon.

282. The practice in recent years of raising seedlings in excess of the station's requirements to supply plants to tobacco growers in case of emergency was continued. However, all growers were able to produce their requirements of seedlings through proper sanitation and disease and pest control. The Tobacco Board continued to carry stocks of all chemicals approved for use with tobacco and most growers obtained their requirements from the Board.

Interspecific Hybrids

283. Work was continued at Richelieu with some interspecific hybrids. The F1 generation was raised and back crosses to the Virginian parents were carried out. The hybrids were vigorous and free from spot diseases.

Fields

284. The season was favourable for the production of flue-cured and air-cured tobacco. All experimental fields were planted in March/April at Richelieu and Pamplemousses. The leaf was free from spots. Fairly large supplies of leaf were required for carrying out the curing experiments described later in this report. Other plantings were made in September/October with all varieties of flue-cured and Burley for testing their resistance to Black Shank disease. A new introduction, NC 95 from the United States was included in the late plantings; the variety is characterised by a very strong root system and appeared to possess considerable resistance to eelworms.

285. A fertilizer experiment, in which the treatments consisted of all combinations of two levels each of Nitrogen, phosphate, potash, lime and manure was planted in mid April with the object of determining their effect on the yield and quality of tobacco. The response to nitrogen was significant at 63.4 lbs per acre. The average yield of the experiment was 908 lbs per acre.

286. Towards the end of the year, the Entomology division introduced, bred and released a parasite of the leaf miner, *Gnorimoscherna operculella* Zell. The control of this troublesome pest with systemic insecticides is usually costly.

287. Two oriental varieties, Samsoun and Souluk were introduced from Rhodesia. A few plants were obtained from seed sown in a sterilised agar agar medium in a conical flask. The plants were planted at Richelieu and sufficient seed was obtained to start the first trials with these varieties in 1965. Oriental tobacco requires dry and sunny conditions to mature and produce a gummy and aromatic leaf; such conditions usually prevail in the north and west of Mauritius from April to November.

288. A variety trial was planted at Richelieu with three established varieties and three more recent introductions to test yield and quality characteristics. No great differences were found in the grade or quality indices of the varieties but there were significant differences in yields, as shown in the following table:

<i>Variety</i>	<i>Yields</i> <i>lbs/Acre</i> ± 69
North Carolina 73 ...	1,016
Cockers 187 ...	958
Yellow Mammoth ...	902
Vesta 30 ...	796
Jamaica Wrapper ...	784
Bonanza ...	686
AVERAGE ...	854 ± 28
S.D. 5% P ± 207	

Seed Production

289. The station continued to be the sole supplier of seed to all tobacco growers. The seed is distributed by the Tobacco Board, free of charge.

290. Tobacco seed was produced by mass selection in plots of selected strains of all commercial varieties. The flower heads of all selected plants were bagged to ensure self pollination. Before distribution, the seed was treated with a one per thousand solution of silver nitrate and dried as a precaution against *Alternaria* leaf spot. The station continued to carry ample stocks of seed of all varieties.

Curing

291. In view of the scarcity and rising cost of firewood, it was considered necessary to carry out curing trials using petroleum products as fuel. Equipment developed in the United States and Rhodesia were used in the experiments. Samples of leaf obtained from the various methods of curing were submitted to the principal local cigarette manufacturers for testing as to their suitability for manufacture and smoking.

292. Four barns 16 feet by 16 feet by 9 tiers high, each capable of taking $2\frac{1}{2}$ tons of green leaf, were used for the trials. They were equipped with the following heating systems:

- (a) twin furnaces and conventional flues and chimneys for burning firewood;
- (b) Gastobac equipment using a 30/70 mixture of methane/propane gas;
- (c) Nu-Oilmatic equipment capable of burning either fuel oil No. 1 (kerosene) or fuel oil No. 2 (diesel oil);
- (d) UHMA steam curing equipment.

The Gastobac and Nu-Oilmatic equipment were fitted with thermostatic control and direct fired, that is, the fuels were burned inside the barn. The gas equipment had nine stoves evenly distributed on the floor of the barn and, in the oil equipment, the fuel is supplied under pressure at 100 lbs p.s.i. to a jet burner inside a combustion chamber located in the centre of the barn floor. The hot gases were directed by short flue lengths and diffuser plates to be distributed to eight points in the barn. The steam curing unit consisted of a cylindrical radiator with two concentric coils heated by steam and an electric fan in the centre of the unit blowing air from the centre of the barn through the fins of the radiator.

293. It was possible to fill all barns with leaf from the same three main pickings, namely with bottom leaf, middle leaf and top leaf. The leaves were tied on sticks which were distributed into the barns so as to obtain as nearly as possible the same barn composition. It was possible to fill the barn with the steam curing unit with the other three barns only at the second picking. Samples of leaf were taken, after each cure, from three levels in each barn and were placed in special containers and forwarded through the Tobacco Board to the manufacturer for tests. The leaf remaining in each barn was then graded, sent to the Tobacco Warehouse where the weights at 10 per cent moisture of all the various grades and their values were assessed. The results were as follows:

(a) *Yields in kgs of Graded Leaf at 10 per cent moisture:*

		Barn No. 1 Flues	Barn No. 2 Gas	Barn No. 3 Oil	Barn No. 4 Steam
1st curing	...	303.2	302.5	280.4	—
2nd curing	...	398.8	376.8	404.4	382.1
3rd curing	...	347.5	375.4	339.7	—
Average :		349.8	351.6	341.5	—

To the above figures must be added the 30 kg, samples of ungraded leaf taken from each barn after each cure. The weights of scrap and perished grades were not included in the above table.

(b) *Value per Kg of Leaf:*

		Barn No. 1 Flues Rs	Barn No. 2 Gas Rs	Barn No. 3 Oil Rs	Barn No. 4 Steam Rs
1st curing	...	8.29	7.47	7.30	—
2nd curing	...	6.46	6.18	6.09	7.87
3rd curing	...	4.98	6.45	5.76	—
Average :		6.50	6.48	6.31	—

(c) *Percentage Grades per Each Method of Curing:*

		Barn No. 1 Flues	Barn No. 2 Gas	Barn No. 3 Oil	Barn No. 4 Steam
Brights	...	30.6	35.7	26.6	56.4
Medium	...	41.2	41.8	50.6	36.7
Darkish	...	28.2	22.5	22.8	6.9

294. From the above results, it would appear that:

- (i) the average yield was the same for all methods of curing;
- (ii) the grade composition and consequently the value per kg of leaf obtained by the first three methods did not differ significantly. Steam-curing gave better results than ordinary flue-curing at Riche-lieu. It must be remembered that steam curing will require at least 8 acres of tobacco which is about double the present average size of plantations.

295. The cost of curing one kg of leaf by the four methods was estimated to be as follows:

		No. 1 (flues) Rs c	No. 2 (gas) Rs c	No. 3 (oil) Rs c	No. 4 (steam) Rs c
Fuel	...	0.46	1.87	0.38	0.30
Labour	...	0.21	0.02	0.02	0.13
Electricity	...	—	—	0.01	0.03
Capital Expenditure	...	0.28	0.10	0.10	0.30
		0.95	1.99	0.51	0.76

296. The important question of possible danger of tainting the tobacco by gas or oil curing is being investigated by the British American Tobacco Company (Mauritius) Ltd. who have sent samples of leaf to their laboratories in London. These preliminary trials will be continued next season.

Leaf Production

297. All leaf produced at the station was sold to the Tobacco Board. The leaf produced by the oil curing unit was baled and stored at the Tobacco Warehouse and will not be sold until the results of the taint tests are known. The revenue obtained from tobacco was Rs 26,619.36.

Potatoes

298. A variety trial was planted at Richelieu at the end of July with seed of several varieties imported from the Union of South Africa, Kenya and Australia. Some varieties arrived in poor condition and their performance was very poor. A table of the yields of nine varieties is given hereunder.

<i>Variety</i>			<i>Yields tons/acre</i>
			± 0.54
Delaware	...	...	9.01
Up to date	...	...	8.83
King George	...	...	7.93
Susanna	...	—	6.80
Kennebec	...	...	5.95
Roseline Sasamna	...	...	5.30
B.P. 1	...	...	5.12
Roseline Ebure	...	...	4.13
Realta	...	...	3.69
Mean			5.97 ± 0.17
S.D. 5%			$P \pm 1.60$

299. Delaware has been a consistently high yielder at Richelieu. All potatoes harvested in this trial were sent to the Curepipe experiment station for storage trials.

300. Late in December, a small trial shipment of seed potatoes of five varieties arrived from Norway. Half of each variety had travelled in a refrigerated hold, the other half in a ventilated hold. The seed arrived in very good condition. On arrival, the seed was well sprouted; half was planted immediately and the other half was stored, put in cold storage for planting in March, 1965.

301. Five varieties of potatoes harvested at the end of September, 1963, were stored in a cool shed with a thatched roof and planted out in mid March. The mean air temperature rose from 74°F in October to near 80°F in January/February and then fell to 78°F in March. It appeared that potatoes will keep well at Richelieu, if harvested mature from a healthy plantation, so long as the air is dry. With the summer rains in January and February, the potatoes started to sprout and thereafter the loss gradually increased. The five varieties were well sprouted by the time they were planted and produced a fair crop which was lifted in mid June.

302. A dormancy breaking experiment was carried out with freshly lifted potatoes. In early July, they were treated with thiocyanates to induce sprouting. The treatment consisted in dipping the cut pieces of potatoes in a one and a half per cent solution of thiocyanate for one and a half hours and planting out immediately. Each variety was divided into four lots and treated with potassium thiocyanate, sodium thiocyanate, ammonium thiocyanate and

a control treated with aretan and planted. Germination was more rapid in the plots treated with ammonium thiocyanate followed by potassium thiocyanate treatment. The plot treated with the sodium thiocyanate also exhibited good germination within a month of planting. Germination in the control plot did not commence before two months and was very poor.

Other Crops

303. The dry climate prevailing at Richelieu is well suited to the production of vegetable seeds of high quality. Several acres of French beans were planted and also plots of other vegetables, including three varieties of lettuce, brinjals, coriander and tomatoes. All seeds and fruits were sent to Barkly experiment station for cleaning, storage and ultimate sale to the public.

304. Maize is grown for both seed and silage. A stock of some 3 tons of seed was produced as usual for storage at Barkly.

305. 690.03 tons of sugar-cane were harvested from about 18 acres. The Mauritius Sugar Industry Research Institute completed selections in three one acre fields, which were planted with seedlings in March, 1963.

306. A number of estates and small growers were supplied with planting material of Pangola and Elephant grass. There was considerable demand for Pangola. This grass is proving to be very hardy; it has been planted in drains with very little top soil and has established itself remarkably well despite dry conditions. In the fields in which it was planted, it has produced almost a pure sward and has eliminated all weeds including "chiendent", *Cynodon dactylon*.

307. A 'mulch' experiment on canes was carried out in November. A plastic mulch prepared from bitumen by a local factory was sprayed in the furrows of a newly planted field, and also on the rows of maize and groundnuts which had been planted in the cane interrows. Two plots were untreated and served as control and two plots were treated with the mulch. The plots were irrigated immediately after planting but before the application of the mulch. No rain fell in November and the first rains fell between the ninth and eighteenth of December when a total of about $1\frac{1}{2}$ inches of rainfall was registered. No differences were observed between the mulch and the control plots; the canes, maize and groundnuts grew well on all plots.

Orchards

308. In the citrus orchard planted in 1959, the oranges, Tangelos, Florida Rough Lemon, Vengasailles and some mandarins fruited. A $3\frac{1}{2}$ acre field was prepared for planting a second citrus orchard early in 1965.

309. The orchards of citrus, mangoes and litchis were irrigated by a 2" pipe connected to the 6" cast iron mains. Three-quarter inch outlets on the 2" pipe enable irrigation water to be taken through a polythene pipe to all the plants of the orchards. The water was applied to a furrow which has been dug around each plant. Up to half a cubic metre of water can be delivered in ten minutes to a plant at one application. It was thus possible to water the plants at regular intervals throughout the dry season with beneficial results both in growth and appearance of the plants.

310. The mango and litchi orchards planted in 1958 and 1959 respectively have also made good progress. Some varieties of mangoes, namely Baissac and Maison Rouge were in full bearing. A spray application of phaltan at flowering, coupled with irrigation, resulted in a particularly good setting of fruit in the mango orchard.

311. Mention should also be made of two grafted apple plants of the variety Tropical Beauty from Queensland, planted in 1962 and of five plants of grapes of variety Condrec 13 which have done very well and fruited.

312. The bitumen seal applied at the bottom of a 1/10 acre fish pond was very effective in preventing seepage of water through the bottom and sides of the pond.

MECHANISATION

313. At the end of the year a Smallford planter was received capable of planting potatoes as well as tobacco seedlings.

DAIRY

314. There were twelve heifers and one bull at Richelieu at the end of the year. Four animals were transferred to Curepipe livestock breeding centre three months before they were due to calve.

MISCELLANEOUS

315. Green fodder was supplied to the Curepipe livestock breeding centre throughout the year at the rate of 5 tons per day from Curepipe and/or Plaisance experiment stations as well as Acacia, *Leucaena glauca*, from Plaisance and cane tops during the sugar-cane harvest. In the colder winter months, cane top silage was used to make good shortages of fresh fodder. The total amount of silage made during the year was about 220 tons.

GRASS AND FODDER

Arsenal—La Ferme—Palmar

316. At Arsenal, line planting of Acacia inside the Pangola field was carried out. In a forest area of Tecoma, Acacia was also planted. The fodder produced was supplied to local cowkeepers. Complete fertilizers were applied after each cut.

317. At La Ferme, two experiments were established during the year: a stage of cutting trial on *Heteropogon contortus* and a variety trial comprising species considered promising for dry land conditions.

318. At Palmar, three new paddocks on the sand were cleared and planted with Pangola. Complete fertilizers were applied at appropriate times. Permanent fencing in the form of stone walls was erected where convenient around some paddocks. Two trials were established in the nursery section: an Acacia variety trial which is a replica of the trial going on at Central Experiment station and a grass variety trial to test the performance of nine grasses under the dry conditions of the station.

XVIII. Plant Pathology

TOBACCO

319. The tobacco crops were unusually free from leaf spotting diseases and aphid vectors were scarce. The frequent washing of hands with soap and water to reduce contact infection, the spraying of seedbeds with Rogor 40 as well as the fields to control aphids appeared to have contributed to reducing the incidence of the virus diseases. Unusually severe strains of tobacco mosaic, together with strains of potato virus Y, including one which is severe on tobacco as well as cucumber mosaic, occurring singly or in mixtures, were identified by the Virus Research Unit, Cambridge, from leaf samples of the tobacco virus complex which was of widespread occurrence in 1963. At the end of the year, a report on the virus disease situation was prepared for the Tobacco Board with recommendations for control measures to be adopted by growers.

320. Late in the year at Etoile, well developed tobacco plants became affected with severe vein clearing and chlorosis coupled with rapid rotting of leaves, stems and roots in small well delimited patches. No fungus, bacterial or nematode pathogen could be isolated. Root and leaf material were despatched to the Virus Research Unit for examination.

TEA

321. A root disease of tea, a few cases of which occurred in February at Wooton experiment station was investigated. The soil borne fungus *Cylindrocladium parvum* Anderson, which was isolated in pure culture from dying plants, is reported to be capable of infecting only injured tissues and causes root decay under waterlogged conditions. The same fungus was saprophytic on small pieces of dead wood left in the field.

POTATO

322. Some seed borne leaf roll virus was recorded mainly on the variety Kennebec imported from Australia. Scattered patches of potato virus Y occurred particularly on the variety Susanna. The incidence of other virus diseases was negligible. Winter conditions were favourable to late blight, *Phytophthora infestans* Lib. de Bary, which started in June at Plaines Wilhems and was severe in the north in July and August. Late blight was observed at Floreal and Curepipe as late as October. The following observations of resistance to late blight were made under extremely heavy blight conditions which prevailed at the Curepipe experiment station during the winter; resistant varieties: Susanna, Pimpernel, Roselyne Sadamna; moderately resistant: Kennebec, Spartan; susceptible to very susceptible: Up-to-date, BPI, King George. In a fungicidal trial for the control of blight, at the Curepipe experiment station with the new fungicide M-45 (80 per cent of Zinc Manganese Ethylene bisdithiocarbamate), Maneb and Zineb, both M-45 and Maneb were equally successful in controlling late blight, while Zineb was not as successful. The control plots were completely defoliated and gave no yield. In a fungicidal trial at Plaisance experiment station with the same fungicides, there was no incidence of late blight but the plots were infected in September with early blight, *Alternaria solani* Ell. & Mart; Zineb,

Maneb and M-45 controlled this disease equally efficiently. The following yields were recorded: Zineb, 138 kgs; M-45, 137 kgs; Maneb, 136 kgs; Control, 114 kgs.

323. In trials at Reduit and Arsenal, when Aretan and Captan were used as potato seed dips prior to planting against seed borne and soil borne rots, no differences in stand between the treatments were observed.

324. In April, plantations at Shoenfield and Rivière des Anguilles were severely affected with bacterial rot, *Pectobacterium carotovorum* (L. R. Jones) Waldee under waterlogged conditions.

MAIZE

325. During the winter months, maize at the Curepipe experiment station was severely affected with pink ear rot, *Fusarium*, sp. which would be a limiting factor to maize cultivation under cold, humid conditions. A high incidence of leaf spot, *Ascochyta seae* Stout, was also discovered.

TOMATO

326. A fungicide trial, carried out in August, at Barkly experiment station with Maneb and two new fungicides M-45 and Antracol was severely affected by bacterial wilt, nevertheless Maneb and M-45 were found to be excellent in controlling both late blight, *Phytophthora infestans* (Lib.) de Bary and grey leaf spot, *Stemphylium solani* Weber. Antracol, a zinc thiocarbamate compound, was inferior. Similar trials at Plaisance and Mapou confirmed the effectiveness of Maneb and M-45.

327. Tomatoes planted at Arsenal, under semi-shade conditions between rows of banana plants were infected with *Cladosporium fulvum*.

GROUNDNUT

328. Winter plantations at Reduit were found to be severely affected, 40 per cent infection, with sclerotial rot, *Sclerotinia sclerotiorum* (Lib.) de Bary, a new host record for Mauritius. In a variety trial at Reduit, the new varieties 'Manipintar', 'Makulu Red' and 'Katumani' showed less defoliation to *Cercospora* spp. than the local variety 'Cabri'.

ONION

329. A severe outbreak of blight, *Stemphylium botryosum*, Wallr. occurred in May at Trou d'Eau Douce and Palmar. Boron deficiency was suspected at Palmar and Grand Sable. In July, onion blast caused by *Botrytis squamosa* Walker, conidial form of *Sclerotinia squamosa* Viennot Bourgin/Dennis, a new record for Mauritius, occurred at Rivière des Anguilles.

EGGPLANT

330. Eggplant wilt, *Diaporthe vexans* (Sacc. & Syd.) Harter, conidial form, *Phomopsis vexans* (Sacc. & Syd.) Harter, a major disease of the crop was epiphytotoxic. In September, 1964, at Abercrombie, a field of the variety 'Farcié' was found to be 60 per cent infected after 4 months. Almost every single plant from the same field became partly diseased. At Plaisance, the

variety 'Cipaye' was 40 per cent infected and almost all plants of the variety 'Farcie', grafted on *Solanum torvum* showed symptoms of wilt and dieback. The variety 'Rosita' was also found to be severely attacked by this fungus. A report was submitted during the year to draw attention to the high incidence of the disease in most localities, the susceptibility of all varieties currently cultivated, the occurrence of alternate host plants and to recommend the introduction of resistant varieties.

BEAN

331. Investigations to determine the relative status of bean diseases were commenced. Although the commonest leaf disease was angular leaf spot, *Isariopsis griseola* Sacc., which occurred both in winter and summer plantations, there was a high incidence of halo blight, *Pseudomonas phaseolicola* (Burkh.) Dowson, in plantations made from July to October, with both leaf and pod symptoms. In September, the latter disease was widespread at Reduit, Abercrombie, Arsenal and at Plaisance, where 40 per cent infection was recorded in a plantation of the variety 'Victory'. Halo blight is seed borne, and locally produced seed is generally infected. It is not controlled by seed dressings. In a fungicidal trial at Plaisance, M-45 was found to control angular leaf spot, *Isariopsis griseola* Sacc. *Rhizoctoria solani* was found to affect bean plantations at Vacoas, Arsenal and Pamplémousses from May to September. The fungus produced lesions at the collar of young plants and caused stunting of growth and poor stands. At Vacoas, older plants were observed to break at the collar during windy weather resulting in appreciable losses. In May, bacterial wilt, *Pseudomonas solanacearum* (E.F.Sm) occurred in plantations at Mapou.

PEA

332. Investigations on the common root diseases and wilts of peas were completed. A fungus isolated in pure culture from dying plants was identified as *Fusarium oxysporum* Schlecht. ex Fr., a new record of this pathogen on peas. *F. solani* was present in association.

CHILLIES

333. Chillies were severely affected with mildew, *Leveillula taurica* Pat., at Trou aux Biches, particularly in winter. Fruit rots caused by *Stemphylium* sp. and *Phyllosticta* sp. were also recorded.

BRASSICAE AND LETTUCE

334. The cold winter season was favourable for sclerotial rot and lettuce drop, *Sclerotinia sclerotiorum*, which caused severe losses to brassicae and lettuce seed crops. At Barkly, in a plot of lettuce of the variety 'Webbs Wonderful', 90 per cent of the seed bearers were destroyed.

VICIA FABAE

335. Stem rot, *Sclerotinia sclerotiorum* (Lib.) de Bary was recorded for the first time on broad beans (bokla) at Vacoas during August; 30 per cent infection occurred in the field. Leaf spot, *Cercospora zonata* Wint. caused some damage to 'Bokla' plantations at Barkly at the same time.

CITRUS

336. Citrus canker was widespread on susceptible citrus species by the end of April. Twig dieback, *Diaporthe citri* Fawcett, was recorded for the first time in Mauritius.

COFFEE

337. Leaf spot and dieback, *Gloesporium* sp. was destructive on young coffee plants at Barkly. The disease also caused severe leaf spotting on older plants of newly introduced varieties.

MANGO

338. In a fungicidal trial at Abercrombie for the control of mango anthracnose, *Colletotrichum gloesporioides* Penz. Sacc. with the fungicides M-45, Captan, Difolatan, there were no great differences between the treated and control plots. All plots suffered very badly from the leaf gall midge. Plants treated with Captan and M-45 gave a slightly higher yield than those treated with Difolatan.

STRAWBERRY

339. At Reduit, strawberry leaf spot, *Mycosphaerella fragariae* (Tul.) Lindau, was successfully controlled by Captan at two grams per litre or Nelprex at $1\frac{1}{2}$ grams per litre or Difolatan at $1\frac{1}{2}$ grams per litre; Captan is safer in that it can be used up to the day of harvest.

CARNATION LEAF SPOT

340. M-45 at 2 grams per litre proved very effective against leaf spot of carnation *Septoria dianthi* Desm. Brestan at 3 grams per gallon caused some slight phytotoxicity.

CONTROL OF PELARGONIUM RUST

341. The fungicides Maneb, Captan and Ziram were the most effective of five fungicides tried for the control of Pelargonium rust, *Puccinia pelargon-zonalis* Doidge.

PLANT INSPECTION AT CUSTOMS AND AIRPORT

342. 1,434 plant import permits and 380 phytosanitary certificates for plants being exported were delivered at the Quarantine Office, Cerné Dock, Port Louis as well as 3,948 certificates of examination for articles being imported.

PLANT QUARANTINE

343. The following plants were grown under quarantine:

From seed to seed:

- (a) Tobacco variety NC 95 from Costa Rica;
- (b) Tobacco varieties Samson and Soluk from Southern Rhodesia;
- (c) Bean varieties 'Pinto' and 'Prince';
- (d) *Nicotiana rustica*;
- (e) Three mango varieties from Burma.

Vegetative Material:

- (a) Vines from Reunion;
- (b) Citrus from Reunion;
- (c) Avocado pear from Reunion.

344. The sugar-cane quarantine greenhouse was operated on behalf of the Department of Agriculture by the Mauritius Sugar Industry Research Institute. 44 sugar-cane varieties underwent quarantine during the year.

MISCELLANEOUS DISEASES AND FUNGI

345. The following were recorded for the first time in 1964:

On Avocado pear trunk—*Botryosphaeria* sp.

On chillies—collar rot—*Corticium solani* (Prill & Delacr.) Bourd. & Galz.

On citrus—dieback—*Diaporthe citri* Fawcett.

On groundnut—Collar and stem rot—*Sclerotinia sclerotiorum* (Lib.) de Bary.

On onion—blast—*Botrytis squamosa* Walker conidial form of *Sclerotinia squamosa* Viennot, Bourgin, Dennis.

On pawpaw—fruit rot—*Phytophthora* sp.

On pea—wilt—*Fusarium oxysporum* Schlecht Ex Fr. *Fusarium solani* (Mart.) Sacc.

✕ On rose—*Cercospora pueri* B. H. Davis.

On sugar-cane—yellow spot—*Cercospora kopkei* Kruger.

rust—*Puccinia Kuehnii* (Krug.) Butler.

gummosis (new virulent strain)—*Xanthomonas vascularum* (Cobb.) Dowson.

leaf scald (new virulent strain)—*Xanthomonas albilineans* (Ashby.) Dowson.

On tea—collar rot—*Cylindrocladium parvum* Anderson.

On tobacco—Tobacco mosaic (severe strains).

Potato virus Y.

Cucumber mosaic virus.

✕ On *Vanda* sp.—*Phyllostictina pyriformis* Cash and Watson.

XIX. Entomology Division

BIOLOGICAL CONTROL

Snails

346. The predatory snail, *Euglandina rosea*, was very common in Redit and Vacoas, the two wet localities where *Euglandina* was first released in 1959. The populations of *Achatina fulica* and *Helix aspersa* were still very high in these areas in spite of the presence of the predator, due probably to the fact that *Euglandina rosea* appeared to be multiplying slowly. Observations indicated that *Euglandina rosea* shows definite preference for *Achatina* snails. The final consignment of 1,500 *Euglandina rosea* were received from Hawaii; these were liberated in various sites in wet localities as well as collections of *Euglandina* from Redit and Vacoas.

347. The other predatory snail, *Gonaxis quadrilateralis*, liberated under very good conditions at the beginning of the year, had not been recovered by the end of the year.

Fruit Flies

348. Fruit flies that emerged from wild guava fruits, *Psidium cattleianum*, and from peaches yielded only *Ceratitis rosa*, confirming the predominance of the Natal fruit-fly. No sign of parasitism was observed. It can therefore be concluded that the mass liberations of various parasites, imported from Hawaii, between 1957 and 1963 were unsuccessful. It is possible that the adults on reaching Mauritius were already senile or that the parasites of *Dacus dorsalis* or *Ceratitis capitata* could not adapt themselves to the Natal fruit fly that exists in Mauritius. As a result, introductions from Hawaii have ceased and a search will now be made in Africa for parasites.

349. The tomato fruit-fly, *Pardalaspis cyanescens*, was widespread, particularly in the south where growers are not keen on insecticidal applications. No natural enemies being available, this pest had to be controlled with pesticides.

Oryctes Rhinoceros

350. (a) *The Chagos Archipelago*.—The Chagos archipelago was visited in April to assess the status of the rhinoceros beetle in this group. The beetle was still confined to Diego Garcia but continued to be a serious pest of palms. Dead coconut trunks were found everywhere in the plantations which of course favour the development of this pest.

351. The parasite, *Scolia ruficornis*, introduced into Diego Garcia from Zanzibar was found to be well established in a restricted area of the island in the vicinity of the settlement. It was determined that these wasps do not parasitise *Oryctes* grubs in dead logs but only in manure heaps which are to be found only in and around the village.

352. The predator, *Platyeris laevicollis*, liberated in 1963, does not seem to have become established.

353. The problem on this island remained therefore acute. Until a determined effort can be made to destroy all dead coconut logs, little progress can be expected in the control of this pest. It is realised that this recommendation will be difficult to implement because of labour shortage. Biological control will be extended when additional parasites, such as *Scolia procer* from Malaya, become available.

354. Rats were another serious pest of coconuts in this group. Warfarin baits, placed into suitable bamboo containers, were suggested as a control measure. The cleaning up of the plantations would also assist.

355. (b) *Mauritius*.—The coconut beetle, *Oryctes rhinoceros*, was found to be moving slowly northwards; the numerous small heaps of manure found everywhere in this region contribute to the spread of the pest. Attempts at biological control were continued. Two thousand scoliid wasps, *Scolia oryctophaga*, collected in the southern parts of the island were liberated in the infested regions. The predators, *Pheropsophus* spp., introduced from India, were liberated in several areas; recoveries have been made and there is hope that these predators will soon be established.

Copra from the Chagos Archipelago

356. A consignment of copra from the oil islands was stored in Mauritius for some time and became badly infested with the copra beetle *Necrobia rufipes*, and various other stored product pests. Dusting with malathion and fogging with a mixture of malathion and DDVP gave good results.

Oryctes Chevrolati

357. Another coconut beetle, *Oryctes chevrolati*, was very abundant during the summer months in a locality where there was a large livestock breeding centre. The beetles caused some damage to the fronds of young coconut palms, but were easily killed by applications of dieldrin.

358. *O. Chevrolati* has never been a pest of coconuts, owing to its occurrence in only small numbers. It is found only in a restricted area of the eastern coast. Until 1960, this part of the island was a favourite place of development for the scoliid wasp, *Scolia oryctophaga*, which kept the beetle well under control. This parasite has now disappeared from this region, probably owing to the lack of suitable feeding plants for the wasps, resulting from the extensive land clearance.

The Potato Tuber Moth and Tobacco Leaf Miner

359. *Gnorimoschema operculella* was widespread both in potato and tobacco fields and was particularly troublesome during the year. Its density was so high in some tobacco and potato fields that, after these crops were lifted, the moths attacked adjoining tomatoes and eggplants, causing unusual damage to these plants; on tomatoes, the caterpillars fed both as a leaf-miner and as a fruit-borer.

360. The Commonwealth Institute of Biological Control commenced studies on this insect three years ago in South America, the region of origin of the pest. As a result, some parasites were discovered and have been reared at the University of California. A shipment of the Encyrtid, polyembryonic, egg parasite, *Copidosoma koehleri*, was received in October and, from this stock, the parasite is being reared very successfully in the laboratory. Liberations were made in tobacco fields and parasitized larvae have been recovered. Other parasites will also be introduced such as the Ichneumonid, *Campoplex harwardii* and the Braconids, *Agathis unicolor* and *Apanteles subandinus*.

361. A mass rearing of field collected *Gnorimoschema* larvae revealed the presence of two local parasites: *Microchelonus curvimaculatus* (Braconidae) and *Nythobia* sp. nr. *longiceps* (Ichneumonidae).

Weeds

362. *Lantana camara* was found to be gaining ground in certain humid localities where a reduction of the population of the defoliator, *Teleonemia scrupulosa*, has been observed. The noctuid, *Hypena strigatus*, results in fairly satisfactory control in dry localities.

363. *Cordia* predators continue to be very effective; both the seed fly, *Eurytoma* sp., and the leaf feeder, *Schematiza cordiae*, were common throughout the island.

364. Cacti were reported to be a pest in a locality where their efficient predator, *Cactoblastic cactorum*, was absent.

Visit of the Director of the Commonwealth Institute of Biological Control

365. The Director of the Commonwealth Institute of Biological Control, Dr. F. J. Simmonds, visited Mauritius between the 28th December, 1964, and the 18th January, 1965, to advise on the biological control of pests. As a result of this visit the Institute will undertake the following work on behalf of Mauritius:

(a) *Fruit flies*.—The mass introduction of adult parasites from Hawaii having been unsuccessful, research will take place in the region of origin of the pests to discover any specific parasites of the various fruit flies presently in Mauritius for subsequent laboratory multiplication and release in the field. The search for parasites of the Natal fruit fly, *Ceratitis rosa*, will be commenced in East Africa and Natal while that for parasites of the tomato fly, *Pardalaspis cyanescens*, in Madagascar. Parasites of *Dacus* spp., particularly of *Dacus cucurbitae*, are available at the Pakistan station of the Institute where studies on the control of cucurbitaceous fruit flies are being carried out: these will shortly be shipped to Mauritius for direct release in the field.

(b) The project on the biological control of the potato tuber moth, *Gnorimoschema operculella*, will be continued with the local production of larval parasites, *Campoplex harwardii*, *Apantheles subandinus*, *Agathis* sp. from stocks from the Indian station of the Institute.

(c) Biological control of the important lepidopterous pests, *Prodenia litura* and *Plusia* spp. will necessitate studies at the Indian, Pakistan and East African stations of the Institute.

(d) *Plutella maculipennis* parasites are available from a number of sources and will be shipped to Mauritius in due course.

(e) Parasites of *Heliothis armigera*, a very serious pest of tobacco and tomatoes, are available at the Indian station and these include *Ecphoropsis* sp., *Erioborus* sp., *Eucarcelia ceylanica*, *Drino imberbis* and *Exorista fallax*. It would appear that the *Ecphoropsis* sp. would be the most promising parasite.

(f) Biological control of *Oryctes rhinoceros* has not yet given spectacular results anywhere in the world. However, attempts will continue with the predators, *Pheropsophus sbrinus*, *Platymeris* spp. and with the parasite *Scolia ruficornis* (obtainable as cocoons from Diego Garcia). Efforts will be made by the Institute to obtain *Scolia procer* from Malaya as this wasp is reported to parasitise *Oryctes* grubs in dead coconut logs.

(g) The local predators of *Lantana camara*, the Tingid, *Teleonemia scupulosa* and the Noctuid, *Hyphenia strigatus*, were not efficient enough to keep this weed under control in all localities of the island. Other predators will need to be introduced namely, the Pyralid, *Syngamia haemorrhoidalis* and the Noctuid, *Diastema tigris*, which is a predator specific to *Lantana*. Efforts were being made by the West Indian Station of the Institute to supply the stem and root borer *Plagiohammus spinnipennis* from Mexico; this predator has been observed to feed on only one other plant, *Cordia*.

366. All these projects will necessitate intensive research extending over at least 5 years. In Mauritius, a survey of all local parasites which may occur on these pests, will have to be made in order to assist the Institute in deciding on the parasites to be procured and despatched to Mauritius for trial.

367. During his visit, the Director of the Institute drew attention to a plant, *Eupatorium*, a pest in certain regions of Africa which appeared to be gaining ground in Mauritius.

PESTS OF CROPS

Tobacco

368. The bud worm, *Heliothis armigera*, and the climbing cutworm, *Prodenia litura*, were again very severe; only partial control could be obtained with endrin and telodrin, owing to difficulties in the application of the insecticides.

369. Nematodes were effectively controlled in the seed beds by fumigation under plastic sheets with methyl bromide which also checks weeds.

370. The cigarette beetle, *Lasioderma serricorne*, was at times severe at the Tobacco Warehouse. Fogging with DDVP and pyrethrins gave erratic results. Fumigation with methyl bromide at atmospheric pressure did not kill beetles and larvae in the middle of pressed bales.

Potatoes

371. The pests, *Gnorimoschema operculella*, *Plusia orichalcea*, *Hemitarsonemus* sp. and *Tetranychus* sp. occurred at varying intensities on potatoes. Chemical control with DDT, dimethoate, metasystox etc. gave fairly satisfactory results. Some experienced growers used telodrin very successfully against severe attacks of *Plusia* spp.

372. Phorate was used on a small scale on experimental stations. The formulation employed was the 10 per cent granular Thimet and the rate of application was 30 lbs per acre. Crops were free of any sucking pests such as mites and aphids throughout the crop cycle. The use of this pesticide should be encouraged among potato growers who would be willing to take the precautions necessary in the handling of this dangerous chemical.

Tomatoes

373. The red spider mite, *Tetranychus evansi*, was the major pest attacking the leaves of the plant. This pest appeared to have developed resistance to both dimethoate (Rogor) and methyl demeton (metasystox), two organo-phosphorus insecticides which have been extensively used on this crop. Satisfactory control was however obtained by adding to those systemic insecticides, acaricides such as kelthane or tedion.

374. The tomato fly, *Pardalaspis cyanescens*, and the boring caterpillar, *Heliothis armigera*, damaged fruit in all localities. Heavy insecticidal applications were necessary to check the pest; Dipterex, diazinon, lebaycid and DDT were of particular value.

Watercress

375. Watercress cultivation was intensified in many localities with adequate running water. Pests attacking the crop were as follows:

- (a) *Prodenia litura*: this lepidopterous pest can ruin the crop in a matter of days. As it is not advisable to use insecticides with long residual effects on this vegetable, the choice of a suitable insecticide was limited; phosdrin has given the best results to date. Its action at a high dosage rate was remarkable by its effectiveness against all stages of the pest.
- (b) *Plutella maculipennis*, the diamond back moth: this caterpillar was common in all localities and damage was at times severe. Dime-thoate (Rogor) and Dibrom were useful in controlling the pest.
- (c) *Aphids*: heavy populations of aphids caused severe deformation in the leaves of many crops which often took on a purplish rosette like appearance. The best aphicide tried to date was Sayfos (menazon) which gave excellent control and possessed the added advantage of being practically harmless to mammals.
- (d) *Mites*: an acarine, *Hemitarsonemus* sp. severely attacked a plantation and could hardly be controlled with the usual acaricides such as Rogor, Tedion and Kelthane; Phosdrin gave fairly satisfactory control.
- (e) *Water snails*: during the summer, a plantation was heavily infested with small water snails; the population was so high that the water cress was virtually unmarketable.

376. Specimens were sent to the British Museum for identification and the report read as follows:

"Here are labelled specimens of your water snails from Cressonville. The majority of the sample are *Lymnaea mauritiana* Morelet, a potential host for the liver-fluke of cattle, *Fasciola gigantica*. There are also a few *Physa borbonica* Ferrusac, a species similar in appearance to *Bulinus cernicus*, the Mauritian host for *Schistosoma haematobium*.

377. Bayer's molluscide "BAYLUSCID", especially developed to control snails in running water, was tried at a concentration of one part per million; the required amount of the product was applied as a spray after the flow of water in the ponds had been stopped; after 24 hours the water was allowed to flow through the beds again. The treatment was highly effective; a large percentage of the snails were killed and were carried away by the current.

SUGAR-CANE

378. The red locust, *Nomadacris septemfasciata* was of minor importance again this year. In November, two French specialists, working in Madagascar on this pest, visited Mauritius and discovered an egg parasite, a Scelionid, which seemed to be fairly common in localities where *Nomadacris* was severe two years ago.

MISCELLANEOUS

Cryptophelebia peltastica (Lepidoptera Olethreutidae)

379. This stem borer of the flamboyant, *Delonix regia*, affected the terminal shoots, causing serious die-back of twigs. Phosdrin and Telodrin gave excellent control on young trees. This pest was also observed damaging litchi trees.

Pericyma vinsoni (Lepidoptera Noctuidae)

380. The looper caterpillars of this moth fed voraciously on the leaflets of flamboyant trees in the Black River district, causing complete defoliation. It is suspected that this unusual outbreak may be due to a decrease in the population of its natural enemies. No attempts at chemical control were made.

Zylocopa fenestrata (Hymenoptera Zylocopidae)

381. This wasp was troublesome in pine timber. They were not affected by the Copper/arsenical compound with which the wood was impregnated under vacuum.

Thiotricha tenuis (Gelechiidae)

382. This microlepidoptera caused extensive defoliation on some Indian Almond trees, *Terminalia catappa* on the coast. The pest was identified by the British Museum as *Thiotricha tenuis* Wals.

LIVESTOCK PESTS

383. Imported cattle were treated at disembarkation against ticks, with a view to reducing the risks of introducing tick borne diseases. The acaricides used were BHC and sevin.

STABLE FLIES

384. *Stomoxys* spp. continued to be severe pests of cattle in both byres and the field. Regular foggings with DDVP and the use of the bait NUVAN (a CIBA product containing 1 per cent DDVP in a sugar preparation) was helpful in reducing populations of this pest.

NEW PESTICIDES

385. Four new organo-phosphorus insecticides were under test against various pests:

(a) EKATIN (a Sandoz product containing 25 per cent Thiometon) is a systemic insecticide/acaricide of low mammalian toxicity. It was very effective against aphids and citrus white flies, *Dialeurolonga* sp, and gave fair control of the red spider mite, *Tetranychus evansi*. It was moderately active against small lepidopterous pests, *Plutella maculipennis* and *Chorionis bjerckandrella*.

(b) Anthio (another Sandoz product containing 25 per cent Formothion) is a systemic insecticide-acaricide of very low mammalian toxicity. It was very effective against aphids and there were indications that it will be of value against pests of vegetables and fruits.

(c) Samples of "Imidan" and of "Garrathion" have been offered by the Stauffer Chemical Co. of New York for test. The former is an insecticide/acaricide of moderate toxicity and the latter is a formulation of Carbo-phenothion for use in the animal health field; Garrathion will be tested against ticks and stable flies, *Stomoxys calcitrans*.

XX. Agricultural Chemistry

FEEDINGSTUFFS

386. Routine checks were made on raw materials received at the Live-stock Feed Factory for preparation of animal feeds. Regular checks were made on the protein content of the prepared feeds.

FODDER

387. Grasses newly introduced and under observation at Redit and Curepipe experiment stations were sampled at the time of cutting and analysed.

388. The five strains of *Leucaena glauca*, recently introduced, were compared with the local variety. The protein content was highest in the local variety.

MILK

389. Monthly checks carried out on the milk from Curepipe livestock station showed that there was an improvement in the fat level over the previous year, 74.3 per cent of the samples taken giving a fat content of 3.5 to 4.5 compared with 70.1 per cent.

390. Experiments were carried out on the freezing point determination of milk with the Hortvert apparatus with a view to detecting adulteration following the addition of water. A large number of samples from Redit and the Curepipe livestock breeding station were analysed pure and after adulteration with water. The tests were not conclusive. The freezing points of the pure milk were not representative of the constant to be applied as the basis of calculation for all cases. In addition, the freezing point determination by the Hortvert apparatus was found to be too tedious to be adopted as a routine method. A simpler apparatus has just been received from Gerber in Switzerland and has already been tried, proving advantageous.

HECOGENIN

391. At the request of the Tropical Products Institute, two varieties of aloe leaves, *Furcraea gigantea*, namely the Creole variety and the Malgache variety, were examined for their content in hecogenin. After dry decortication, the leaves were squeezed and the juice treated. The final crude extract was, for the Creole variety 40 grams and for the Malgache variety 45 grams per 100 litres of juice. Both samples were sent to the Tropical Products Institute for an assessment of their purity.

COBALT

392. A survey was started of the cobalt status of various types of fodder utilized throughout the island. As the use of more recent apparatus normally calls for improvements to older methods, a new method based on column chromatography technique and spectrophotometry was tried for the determination of micro quantities of cobalt. Several modifications had to be made before the method could be adopted. A few determinations were carried out but there still remains a lot of work to be done. Shoots of *Leucaena glauca* were found to have a high content of cobalt, the figures obtained ranging between 0.5 to 1 mg per kg; the normal level of cobalt in plants is 0.5 to 0.2 mg per kg.

SILAGE

393. Samples were received from pits established in various localities of the island. The analysis has proved valuable. The difficulty of determining the lactic acid content remains; the method adopted did not give reliable results, another method using paper chromatography was tried without success. A newly published method for the determination of organic acids by the column chromatography technique is now under investigation.

WATER

394. A number of analyses were performed to determine the degree of salinity of underground water in association with investigations being undertaken by the Ministry of Works. Water from Puits des Hollandais at Palmar was found to contain about 4 per cent of sea water at the surface and 75 per cent at a depth of 60 feet.

AFLATOXIN

395. A method published by the Tropical Products Institute for the analysis of groundnut cake to determine its content of aflatoxin was under study. The method involves thin layer chromatography on glass plates. Certain difficulties were encountered, but finally the method was applied with success. The detection and estimation of aflatoxin can now be considered satisfactory. A sample of groundnut cake from a recent consignment was found to contain about 0.05 ppm of aflatoxin; such a content is considered to be on the low side.

XXI. Engineering Division

SERVICING OF DEPARTMENTAL MACHINERY AND VEHICLES

396. The servicing, repair and maintenance of all departmental vehicles, tractors and machinery were carried out at the central workshop. Complete service records were kept. The following servicing and repairs were carried out:

Vehicles	...	...	261
Tractors	...	...	142
Other agricultural machinery	...	...	230
			633

Two tractors were overhauled and two Austin Gipsy canvas cabs were converted to hard tops.

397. The following equipment and accessories were designed, assembled, fabricated or installed:

- (a) A heavy duty toolbar for a ridger for the Ferguson Tractor FE 65 was designed and manufactured;
- (b) Assembly of a Stephens cabinet 12,000 egg capacity incubator, a vegetable planter and filing cabinet;
- (c) Manufacture of 3 steel and 1 wooden trailer bodies and 3 wooden bodies for lorries;
- (d) A weighbridge was dismantled at Fort George and reassembled at Roche Bois Quarantine Station;

- (e) Several sign boards and several trailers were painted. A tractor and a jeep were spray painted;
- (f) Manufacture of 6 tables, 5 benches, 7 armchairs, 1 cupboard and 3 stools;
- (g) Manufacture of 8 canvas hoods for tractors and jeeps;
- (h) Manufacture of one fumigation drum;
- (i) Racks with slotted angle iron;
- (j) Incinerator for Animal Quarantine Station;
- (k) 10 ice boxes;
- (l) 581 fencing posts out of angle irons and rails;
- (m) 32 gates out of galvanised iron pipes;
- (n) Numerous foundation and other bolts, hinges, brackets and supports.

BUILDINGS

398. The following buildings were completed and handed over:

- (1) Roche Bois Quarantine Station.
- (2) Hardening shed at Wooton.

399. The construction of a greenhouse to accommodate another Bahnson humidifier was commenced and work was well advanced by the end of the year.

400. Work on the extension of the new concrete raw material store at the Livestock Feed Factory was well advanced.

401. The foundation was laid for a new steel tank to hold 300 metric tons of molasses.

402. Apart from the above, the following minor works were carried out:

- (a) Repairs to roofs of labourers' quarters at Mapou District Headquarters;
- (b) A concrete cover for the absorption pit for an Insectarium at Reduit.

403. Work was commenced on:

- (1) Improvement to binder's workshop;
- (2) A shed at Fort George, adjacent to the fumigation plant.

404. The extension of the storage capacity of the Barkly and Curepipe experiment stations' offices was done by the division concerned, under the supervision of the Engineering Division.

LIVESTOCK FEED FACTORY

405. 4,324 tons of various animal feeds were manufactured during the year from products such as wheat bran, maize flour, maize, rice, groundnut cake, cotton seed cake, pollard, meat meal, fish meal, oats, lucerne meal, bone meal, cod liver oil, skimmed milk powder, molasses, bagasse, wheaten flour, peas, broad beans, scums, beef fat, trelcovite, trelco D 3, trelco brand nitrofurans, trelco brand nitrofurazone, amprolmix U K, T.M. 10 and salt.

406. Sixteen different kinds of animal feeds were offered for sale, namely: poultry feed, chick feed, cow feed loose, cow feed cubed, calf feed, bull feed, cattle feed, new cattle feed, pig grower feed, pig starter feed, creep feed, horse feed, special horse feed, scums molasses feed, turkey chick feed, broiler feed.

407. 4,324 tons of livestock feeds were sold at the Livestock Feed Factory and Extension Shop, Rose Hill. A statement of revenue and expenditure is given at Appendix "E". Orders for additional machinery were placed.

XXII. Fisheries

408. The duties of the division were to enforce the provisions of the law regulating fisheries in territorial waters and to study, recommend and implement such measures as may be necessary to improve the production of fish. The division also collects statistical data, takes all steps necessary to improve the efficiency of the industry and the welfare of the fishing community.

OYSTER CULTURE

409. Excessive variations in salinity and temperature cause considerable damage to the young oysters at Pointe de Flacq oyster bed and a large proportion died during the year. Steps have since been taken to move the installations to another area where more favourable conditions could be expected.

410. No improvements were made to Trou d'Eau Douce (Montagu) oyster farm and no collectors were supplied.

411. The breeding at Poudre d'Or and Beau Rivage, though still below normal, was satisfactory and the results were encouraging.

CONSTRUCTION OF FISHERIES POSTS AND FISH SHEDS

412. In 1964, a fisheries post was constructed at Trou d'Eau Douce, together with two fish sheds, one at Tamarin and the other at Poste de Flacq, bringing the number of fish sheds now in use to nine.

VISIT OF A FISHERIES EXPERT

413. Dr. Henri Fougère of the Fisheries Research Board of Canada continued, under the auspices of Canadian Technical Assistance, to assist in the development of the fisheries of the island.

414. The feasibility of gill-net fishing in the lagoon was studied and extensive sea trials were carried out with very promising results. Suitable gear was devised for catching shark and techniques for the catching, processing, salting and drying of shark meat were perfected and demonstrated. The growth and reproduction of *Scilla serrata* was under study as well as stocking and yield of barachois. The work of the fisheries expert is recorded in greater detail elsewhere in this report under shark, barachois and gill-net investigations.

SEA FISHING

415. Fishing was considerably reduced. Results were affected by strong trade winds which prevailed throughout the winter season and the total catch fell by 329.9 tons compared with 1963; the catch was even below that of 1962, the worst year in the past five years.

Controlled catch per quarter (tons)

		<i>Average</i>					
		1951-59	1960	1961	1962	1963	1964
1st Quarter	...	410.5	246.1	451.4	284.2	372.1	296.0
2nd Quarter	...	421.8	375.6	427.7	334.4	436.6	348.0
3rd Quarter	...	335.3	312.2	277.3	257.4	322.2	204.0
4th Quarter	...	434.3	434.3	331.0	339.3	344.0	297.0
TOTAL	...	1,602.1	1,368.2	1,487.4	1,215.3	1,474.9	1,145.0

416. The catch landed by the net fisheries was lower than that of the previous year owing to unfavourable weather conditions.

<i>Year</i>	<i>Catch (tons)</i>	<i>% of Total Controlled Catch</i>
1951-55	410	25.0
1956	372	22.5
1957	364	21.8
1958	319	19.7
1959	342	26.3
1960	418	30.6
1961	413	27.8
1962	414	34.0
1963	396	26.8
1964	327	28.5

417. The total controlled catch was also lower by 372 tons than the average for the years 1956-1960.

<i>Year</i>	<i>Average catch (tons)</i>	<i>Difference from the average of 1,520 tons</i>
1946-50	1,492	-28
1951-55	1,637	+117
1956-60	1,520	—
1960	1,368	-152
1961	1,487	-33
1962	1,215	-305
1963	1,474	-46
1964	1,145	-375

418. The contribution to the catch by the various modes of fishing was as follows:

Catch in tons

		<i>Average</i>		<i>Catch</i>				
		1951-55	1956-60	1960	1961	1962	1963	1964
Nets	...	410	363	418	414	414	396	327
Basket traps	...	715	628	492	596	408	567	394
Lines	...	247	275	253	248	183	230	223
Octopii	...	238	219	177	193	181	237	172
Lobsters	...	27	28	18	25	17	25	19
Harpoon fish	...	—	7	10	11	12	19	10
TOTAL	...	1,637	1,520	1,368	1,487	1,215	1,474	1,145

TYPES OF FISH CAUGHT

419. The distribution of the fish species caught was as follows:

<i>Species</i>	<i>Kgs</i>
Capitaine, <i>Lethrinus nebulosus</i> ...	26,381
Dame Berry, <i>Lethrinus mahsena</i> ...	50,423
Battardet, <i>Lethrinus harak</i> ...	26,409
Caya, <i>Lethrinus reticulatus</i> ...	23,842
Cordonnier ; <i>Siganus spp.</i> ...	197,800
Rougets, <i>Mullus</i> ...	48,385
Mullets, <i>Mugiloidae</i> ...	35,362
Vieilles, <i>Senanidae</i> ...	68,895
Licornes, <i>Naso spp.</i> ...	94,063
Octopii ...	172,374
Lobsters ...	18,672
Other species of fish ...	383,005
TOTAL ...	1,145,611

LOANS TO FISHERMEN

420. The scheme of loans to fishermen for the construction of boats, which commenced in 1960, was recommenced and by the end of 1964, 1,387 loans were granted, including 28 which were written off following destruction of the boats by cyclones. The total expenditure from public funds amounted to Rs 592,296. The refund of loans was irregular.

DETECTION OF FRAUD

421. The results of the control exercised by the Inspectorate show again an important reduction in the number of contraventions, compared with the previous year, consequent on the activities of the personnel of the division.

<i>Year</i>	<i>Cases Prosecuted</i>	<i>Convictions</i>	<i>Total Contraventions</i>	<i>Illegal nets</i>	<i>Explosives</i>	<i>Total of Fines Rs</i>
1953	515	508	550	129	16	16,172
1954	586	571	635	148	44	15,256
1955	473	463	524	110	54	15,036
1956	390	383	436	117	35	11,059
1957	403	396	509	101	30	11,689
1958	429	423	466	115	26	12,360
1959	319	305	421	83	40	10,518
1960	230	229	330	67	23	7,477
1961	248	243	325	100	27	9,971
1962	195	192	270	61	35	4,950
1963	213	199	279	84	22	6,657
1964	144	230	185	76	19	5,915

In addition, 21 cases were pending at the end of the year.

SHARK INVESTIGATION

422. The object was to supply additional protein food to the population. Initially, it was necessary to contrive means of catching sharks by devising different types of short and long lines, studying the depth at which the bait would be most effective, the colour of buoys which would either attract or repel sharks as well as the most effective and non-expensive bait to be used. It was also necessary to observe shark behaviour once caught and devise an efficient technique of killing and towing.

423. Concomittant with these efforts, the shark meat was the subject of systematic studies under various conditions of salt and water exchange, curing and drying. Thus a processing technique was devised which gives a product which is appreciated by many who have had the opportunity of tasting it. The techniques evolved were as follows: The shark is eviscerated, beheaded and skinned. The fins are collected for drying. The meat is then cut into slices 12 inches long, 6 inches wide and one inch thick. The salting consists of adding successive layers of dry salt and meat, in wooden tubs, in the proportions of 25 pounds of salt per 100 pounds of meat. By the process of salt and water exchange, a natural phenomenon which takes place when salting with dry salt, the meat within a couple of hours is submerged in its own brine. Thus, the waste products, particularly urea, which tend to give an acrid taste and an ammoniacal odour, are extracted and dissolved in the brine. After four days, the salted product is dipped and washed in a three per cent brine and put out to dry on wire racks.

424. From March, 1964, to January, 1965, a team of four men at Pointe aux Sables have captured eleven tons of sharks and have processed the meat, which was initially distributed free of charge to the public for the purpose of assessing whether the product would be acceptable. It is now being wholesaled at Rs 0.75 and retailed at Rs 0.90 per pound.

425. A few fishermen are being encouraged to capture shark and salt the flesh. Salted undried shark meat is purchased from fishermen at Rs 0.25 per pound and the fins at Rs 0.75 per pound. The drying is carried out at Pointe aux Sables. When these fishermen have mastered the technique of curing, it is hoped to equip and show them how to dry their product for the wholesale market. A small nucleus of what may be called a co-operative shark fishery is in existence at Grand River South East.

426. The estimated quantity of liver, oil and meat which accidentally caught sharks may represent during the course of one year, was calculated from records supplied by the division for 1963, table III refers. Although these records are not accurate, as to species, it can be assumed as a result of observation, that the majority of sharks represented were tigers and chasseurs.

427. The conversion factors, tables I and II, were arrived at during the course of the present shark investigation. They represent the mean of several weighed samples for each length, irrespective of sex, and are reasonably valid, at least for the period during which the investigations were carried out, namely March to December, 1964. They apply to two species only. Length for length, the gross weight and the weight of the meat of the tiger shark is generally less than that for the chasseur. However for the purpose of arriving at conclusions within reasonable limits, with the exception of the 4 to 6 feet lengths, which may represent chasseurs, tiger sharks have been used in all calculations. Length, for the purpose of uniformity, is recorded within limits of 6 inches. Thus a 4 ft. 7 in. or a 5 ft. 5 in. shark is recorded as being 5 feet long. The liver of a tiger or a chasseur shark represents roughly 18.5 per cent of the gross weight.

TABLE I
GROSS WEIGHT OF SHARKS IN RELATION TO LENGTHS

<i>Tiger</i>		<i>Chasseurs</i>	
<i>Length in feet</i>	<i>Weight in lbs</i>	<i>Length in feet</i>	<i>Weight in lbs</i>
6	102	4	40
7	120	5	58
8	160	6	120
9	258	7	148
10	378	8	238
11	458	9	290
12	672		
13	686 (one specimen only)		

TABLE II
AVERAGE WEIGHT OF READY TO PROCESS MEAT IN RELATION TO
LENGTH OF SHARKS

<i>Tiger</i>		<i>Chasseurs</i>	
<i>Length in feet</i>	<i>Weight in lbs</i>	<i>Length in feet</i>	<i>Weight in lbs</i>
7	42	4	24
8	48	5	26
9	80	6	50
10	118	7	56
11	170	8	116
12	248	9	130
13	320 (one specimen only)		

TABLE III

RETURN OF SHARKS LANDED IN MAURITIUS DURING 1963 AND THEIR
COMPONENTS HAD THEY BEEN PROCESSED

Length (in ft.)	...	4	5	6	7	8	9	10	Total
No. of sharks	...	497	442	153	50	77	82	113	1,414
Gross weight (in lbs)	...	19,880	25,636	15,606	6,000	18,326	21,156	42,714	149,318
Weight of liver (in lbs)	...	—	—	—	—	—	—	—	27,624
Weight of meat (in lbs)	...	11,928	11,492	7,650	2,100	3,696	6,560	13,334	56,754

These figures may be summarised as follows:

1,414 sharks were landed in 1963

Gross weight	...	...	...	74 tons
Liver	...	...	...	14 tons
Meat	...	...	...	28 tons

There is no established shark fishery in Mauritius. The sharks recorded have been caught accidentally by fishermen during the course of their normal fishing operations. The figures herewith presented are, it is believed, within fair limits of estimation. Twenty eight tons of shark meat landed in 1963, would have given 16 tons of a finished product which at Rs 0.75 per pound would have given a return of Rs 24,000 to an organised group or groups of fishermen.

BARACHOIS

428. There were at least 20 barachois on the island and there are possibilities of creating more. It is estimated that if they were well organised and systematically exploited, they could supply several tons of fish per annum.

429. With the view to demonstrating that a well organized and systematically exploited barachois, while being a profitable enterprise, could also be of benefit to the country, the division retains the Beau Vallon barachois at Mahebourg as an experimental fish farm. It has been stocked with fingerlings of species of economic fishes such as Cordonnier, Gueule-Pavée, Capitaine, Breton and Batardet for the purpose of making productivity measurements and ascertaining what a unit body of water of this nature could consistently supply. The fingerlings were introduced in March, 1964. Observations indicate that the natural stocks are of legal size and systematic fishing once per week will begin next year.

430. Furthermore, a special enclosure with a holding capacity of 100,000 oysters was constructed in the barachois although, at present, there are only 50,000 small, medium and large oysters under observation in different environments to follow growth rates and to ascertain reproduction. The oysters have shown a survival rate of roughly 60 per cent, under present conditions. The death rate, we presume, is due to the possibility that they have suffered from shock when collected from rocks and mangroves and therefore were weak when set in the trays. Nevertheless they have shown remarkable growth rate.

431. Over 200 small crabs, *Scilla serrata*, were introduced, some in the oyster enclosure and others outside in the main body of water. The ones in the enclosure were fed with trash fish while the others must feed themselves. The purpose of this trial is to compare growth rates. The crabs were introduced in March, 1964. The ones which were retained in the enclosure and fed have grown from 5 cms to 15 cms in approximately 10 months, none of the others have been measured. It was observed that crabs breed during September and October.

432. The basic concept of this investigation could possibly be better explained by an example. If this body of water which is roughly 183 acres could consistently yield 50 pounds of fish per week by means of selective fishing, its production rate would be 200 lbs per month which should contribute considerably towards the salary of a fisherman guardian who would look after the other products such as oysters and crabs. On the basis of 30 barachois, supplying the above quantity of fish, the total monthly production would be 3 tons.

433. Raising oysters and crabs would undoubtedly be a profitable enterprise. At nearby foreign markets, oysters could command at least Rs 3.00 per dozen and, when applying a rotation system of 24,000 per year, the revenue should contribute to the expenses incurred for the upkeep of the barachois with a reasonable profit. Crabs sell at Rs 2.00 per lb and the market appears to be good.

GILL-NET INVESTIGATIONS

434. Experiments have shown that returns per individual fishermen in groups of five with a gill-net 600 feet long and of 10 cms mesh are at least equal to those of any large seine. In addition to selectivity, the type of sedentary fishing which the gill-net offers, contributes to the tranquility and to the successive reconstitution of a fishery by respecting immatures and normal feeding and spawning migrations. It contributes to rational fisheries management.

435. From the months of April to September, fishing, generally is difficult and sporadic because of rough seas. A gill-net can be set from the sea shore and extended out to deep waters even in relatively bad weather, in contrast with the difficulty of fishing with a large seine which is used mostly when fish is visible and can be surrounded.

436. From October, 1963, to March, 1964, trials were carried out to determine the mesh size which would give good returns while respecting, as much as possible, the immature fishes. When measured diagonally, the 8 cm mesh was too small to meet the objective. The 12 cm mesh, at least in the light of observations made during the trials, appeared to be rather large. As a result the 10 cm mesh was selected for all subsequent investigations.

437. At Trou d'Eau Douce, from April 7 to June 19, five fishermen with a gill-net 600 feet long, 10 cm mesh and 6 feet high, landed 1,063 lbs of fish in 34 fishing days. The daily average per fisherman was 6.2 lbs. During the same period, five fishermen with a gill-net 600 ft long, 10 cm mesh and 12 ft high, landed 1,372 lbs of fish in 31 fishing days. The total daily average was therefore 44 lbs and the daily average per fisherman was 8.8 lbs.

438. During the same period and in approximately the same area, 45 fishermen fishing with three large seines, caught 15,600 lbs of fish in 49 fishing days. The total daily average was therefore 318.4 lbs and the daily average per fisherman was 7.0 lbs which is about the same average as the gill-net.

439. From July 1 to September 15, ten fishermen with two gill-nets 600 feet long, 10 cm mesh and 25 mesh high, approximately 5 feet, in the lagoon off Grand River South East, landed 2,293 lbs of fish in 28 fishing days. The total daily average was therefore 82 lbs and the daily average per fisherman was 8.2 lbs.

440. During the same period, 33 men fishing with two large seines, in the same vicinity, landed 6,404 lbs of fish in 27 fishing days. Their daily average was therefore approximately 237 lbs and the daily average per fisherman was 7.2 lbs.

441. During the same period, one gill-net fished exclusively the reserve at Grand River South East, it landed 503 lbs of fish in 24 fishing days. The average daily landings were therefore 21 lbs and on the basis of five men, the individual daily landings 4.5. The effort of the gill-net in the reserve was about half that of a gill-net outside the reserve, tending to indicate that there is less fish in the reserve than might be expected.

442. These statistics, compiled over a period of $5\frac{1}{2}$ months of comparative fishing, indicate that at least, in one large sector of the fishing grounds of Mauritius, gill-net fishing is equal to, and in many respects superior to, large seine fishing.

443. When considering the livelihood of the fishermen, it is important to emphasize that the sharing of the catch is equal among the 5 fishermen using a gill-net, whereas it is not always so with the fishermen labouring with a large seine.

444. Studies of fish behaviour in this area lead to further conclusions. As reported, gill-net operations were profitable from April to September, but as the season advanced, catches diminished constantly and to a level which, when considering wear and tear of the nets, makes this type of fishing as practiced doubtfully profitable during a certain period of the year, which coincides with the spawning season. This of course is one of the answers that were being looked for as it can be tentatively concluded that, during the feeding migrations from early winter through to early summer, the fish follow the shore where food is abundant and, since the nets were set from the shore, returns were good. However, during the spawning season, the fish do not feed, but migrate to deeper waters, canals and the reefs in search of spawning grounds.

445. This is a valuable observation which may serve to elaborate a policy regarding close seasons, which indeed could be put into effect from October 1st to March 1st, a period during which no net of any kind should operate in the lagoons and on the reefs. It is further worth noting that while gill-net fishing returns became low within the lagoon in question, another type of fishing succeeded it with equally profitable results. From the middle of October, Carrangue, needle fish and sharks appear in great number and, if properly equipped, fishermen should be able to operate profitably until the migrating cycles start over again.

446. With these considerations in mind and, as a sequel to past efforts to ascertain the effects of close seasons on the reconstitution of the fisheries of the island, it must be emphasized that close seasons are for the purpose of respecting growing stocks and reproduction. But the close seasons of the past were too casual to be of any significance. They were not of sufficient and consist duration to be representative of any change which could subsequently have taken place. Normally, growing stocks which survive during effective close seasons should show up as additional weight two to three years later. For that reason close seasons, to have any practical significance should cover several spawning and growth periods. Furthermore, it must be pointed out that, in the light of one single isolated observation and particularly of short duration such as has been put into effect in the past, factors such as bad or good weather, a poor or good spawning season, coupled with considerable or lesser destruction of fry and immatures by poaching activities, can often lead to erroneous conclusions. Past attempts of the effect of a close season may have been misinterpreted as instead of three months, the close season should have been consistently of 5 months duration.

447. Gill-net fishing with a definite mesh size, while not interrupting the rational exploitation of a fishery, could be almost as effective as close seasons, with the added advantage of exploiting the larger mature fishes which have already reproduced and absorb the food so readily needed by their progeny. This is what is meant by selective fishing and rational fisheries management, and to illustrate the point and confirm or otherwise the above observations based on the limited trials carried out to date, a large commercial scale investigation should be undertaken with the exclusive use of gill-nets, line and traps in an area of such dimension that will favour close observations of fishermen, landings, productivity and maximum sustained yield.

448. The area most likely to present advantages for an investigation of this sort is the lagoon at Grand River South East. This area has been chosen after careful observations and consideration; no other place is more suitable. There are roughly 30 fishermen in the community, constituting a controllable, fair size investigational team. None of these fishermen own a large seine. They practise their trade by means of handlines and traps. Furthermore, most of them have had experience in the use of gill-nets during the course of investigations with this type of fishing gear. The fishing area envisaged is sufficiently large and is rather evenly populated with fish but not in large quantity.

449. As a contribution to the introduction of gill-net fishing on the fishing grounds of Mauritius, and to ascertain what benefit may be derived therefrom, a pilot area should be reserved as an experimental venture. This area, comprising all the waters from the main shore line and extending 2,000 yards beyond the reefs and enclosed between a line extending from Pointe Magasin to the Southern end of l'Ile des Roches and a line extending from Pointe du Diable to the Southern end of l'Ile des Flamands should be closed to all large seine and canard operations and declared as an area set aside exclusively for gill-net, line and trap fishing for a period of not less than four years and fished by the number of nets judged to fit conditions by the investigator in charge.

450. This special reserve should be recognised as an experimental area. It should be restocked with fingerlings of commercially important fishes with the view to ascertaining the possibility of restocking other areas around the island. After several months it should support a profitable line and trap fishery. Legalised gill-net fishing in this area therefore should not be delayed.

XXIII. Rodrigues

GENERAL

451. There were good crop growing conditions and no drought or severe cyclone was experienced. A record crop of about 500 tons of onions was produced as well as a record export of 4,656 pigs was recorded. A successful start was made by the Agricultural Marketing Board, when onions were declared a scheduled crop and were purchased at reasonable prices. New tree and grass plantations were well established under favourable conditions. In general, 1964 was a very favourable year for the island.

PRODUCTION AND MARKETING

452. The m.v. " MAURITIUS " visited the island on 13 occasions and the following table records the island's exports on each occasion:

Date	Cattle	Pigs	Sheep and Goats		Crates of Fowls	Onions	Garlic	Acacia	Salt fish	Octopus
						Bags	Bags	Bags	Bales	Bales
4. 1.64 ...	—	46	158		5	—	—	4	130	—
8. 2.64 ...	97	423	671		67	24	10	142	163	108
21. 3.64 ...	98	315	614		45	20	40	—	657	20
22. 4.64 ...	—	34	100		8	—	—	—	193	—
7. 5.64 ...	26	272	281		57	—	—	86	94	56
26. 5.64 ...	—	289	311		42	—	—	49	260	—
2. 7.64 ...	94	479	209		94	—	—	95	677	—
22. 8.64 ...	133	647	338		73	—	—	105	196	175
27. 9.64 ...	26	271	587		58	—	—	112	181	74
3.10.64 ...	28	677	320		52	1,091	107	183	206	252
15.11.64 ...	43	609	651		53	3,613	49	36	373	215
10.12.64 ...	—	—	—		—	—	—	—	98	—
21.12.64 ...	71	594	826		62	3,447	16	—	107	70
TOTAL ...	616	4,656	5,066		550	500 tons	18 tons	812	3,335	950

These figures were obtained from the records kept by the stevedore in Rodrigues.

453. The approximate value of these exports was:

	Rs
616 cattle at Rs 250 each ...	154,000
4,656 pigs at Rs 90 per head ...	419,040
5,066 sheep and goats at Rs 40 per head ...	202,640
550 crates poultry, 36 birds per crate ...	86,625
averaging 2½ lbs each at Rs 1.75 per lb	
500 tons of onions at Rs 600 per ton ...	300,000
18 tons of garlic at Rs 1,000 per ton ...	18,000
81 tons of acacia seeds at Rs 460 per ton	37,260
3,335 bales salt fish at 140 lbs per bale at Rs 0.90 per lb	420,210
950 bales octopus at 140 lbs per bale at Rs 1 per lb	133,000
TOTAL ...	1,770,775

454. The following table compares the total exports as from 1960:

	1960	1961	1962	1963	1964
Cattle ...	615	720	1,076	579	616
Sheep and Goats	6,133	5,654	5,963	5,745	5,056
Poultry, Crates ...	728	650	636	706	550
Pigs ...	2,908	2,258	2,858	3,542	4,656
Onions and Garlic, tons	258	150	51½	285	518
Acacia, tons ...	235	75	38	130	81
Salt fish, bales ...	2,712	2,450	2,800	3,157	3,335
Octopus, bales ...	1,475	1,090	1,570	948	950
TOTAL VALUE Rs	1,586,562	1,297,555	1,484,810	1,566,787	1,770,775

455. It must be borne in mind that every year more meat and fish is being consumed locally, due to the population increase and rising standards of living. Half of the existing population was below the age of 14 years.

Despite this increase in local consumption, exports were gradually increasing. In the above table, the value of exports was calculated for each year on the prices quoted for exports in 1964.

456. The Agricultural Marketing Board commenced its activities in Rodrigues by declaring onions a scheduled crop. This resulted in a reasonable price to the producer and intense support and interest was shown by producers in the activities of the Board.

LAND DEVELOPMENT AND SETTLEMENT

457. No changes were made in the methods of land development and settlement from those detailed in the 1963 annual report. The development work entailed in terracing and rehabilitation and the opening up of new farming areas continued at a steady pace. The present rate of development is somewhat slow and should be increased as soon as possible not only in order to satisfy the demand created by an "exploding population" but also by the results obtained in increasing production which is clearly seen by the majority of the population.

458. The centres of settlement where population pressure was most intense was in the Petit Gabriel, Soupir, Latanier areas and the fishing communities of Oyster Bay, Rivière Coco and Port South East. In these areas, most of the land in the immediate vicinity has been leased. In the former areas, there will have to be a movement out of the area by the coming of young families, either to Baie Malgache or to the east or west of the island. The pressure at Port South East may be released by the development of the Mourouk valley and neighbouring areas. The vicinity of Oyster Bay and Rivière Coco is now almost completely leased, it is imperative therefore that an improvement in fishing facilities and techniques be achieved as soon as possible to reduce the risk of want in these areas coupled with a movement out of these areas to the east or west of the island.

459. A survey made during the year showed that of 3,650 families, 838 were farming on lowland farms, 1,210 on unit farms in the uplands and 301 in the valley bottoms which have been recently developed. 1,088 families were farming on unprotected lands of poor fertility, subjected to intense erosion. All the lowland farms were highly fertile as were all the valley bottoms. About half of the unit farms were still undergoing rehabilitation as it takes 6 or 7 years to build up a satisfactory level of fertility on these eroded areas after the anti-erosion works have been installed. Consequently, relief work during the period December to May has to be introduced every year for about 1,200 families. This number will of course decrease over the years as the development work progresses.

460. At the close of the year, there were completed 1,239 vegetable plots, 857 lowland farms, 1,210 unit farms and 34 dairy farms.

RE-AFFORESTATION

461. A further 250 acres of steep slopes and hill tops were successfully reafforested bringing the total of such plantations to about 1,550 acres. These plantations have resulted in a striking improvement in wind and water control and the filao has proved an excellent tree for giving a quick cover on poor, eroded windswept ridges.

FARM WATER SUPPLIES

462. Water pumping stations are in operation at Bigarade, Cygangué and Brule-Bassin Martin. There are completed 30 dams and 15 storage tanks and the distribution piping laid to-date is as follows:

Year	$\frac{1}{2}$ " Pipe ft	$\frac{3}{4}$ " Pipe ft	1" Pipe ft	1 $\frac{1}{2}$ " Pipe ft	2" Pipe ft	Total ft
1961	1,633	—	8,906	—	6,384	16,953
1962	5,100	3,303	22,985	5,721	6,321	43,430
1963	6,274	6,641	11,384	4,589	14,929	43,817
1964	7,334	7,210	10,712	5,000	10,185	40,441
	20,371	17,154	53,987	15,310	37,819	144,641

463. The number of water taps installed on these pipe lines is:

1961	1962	1963	1964	Total
105	101	156	185	547

DEMONSTRATION PLOTS

464. Demonstration unit farms continued to be maintained and were regularly visited by farmers.

LIVESTOCK BREEDING CENTRES

465. Sales from the six centres compared with previous years were as follows:

Year	Dairy Cattle		Pigs		
	Adult Female	Young Male	Adult Female	Young Female	Young Male
1958	1	1	—	—	13
1959	7	3	—	5	35
1960	39	61	6	74	135
1961	38	66	1	178	220
1962	34	65	22	341	329
1963	37	98	6	314	315
1964	47	92	14	277	284

466. The number and distribution of the Government herd at the end of the year were as follows:

				Dairy Cattle				Total	
Centre				Adults		Young			
				M	F	M	F		
Oyster Bay	...	...	...	1	13	6	28	48	
Le Chou	...	...	...	2	28	5	28	63	
Malabar	...	...	...	2	17	5	48	72	
St. Gabriel	...	...	...	1	19	7	39	66	
Maréchal	...	...	...	2	21	13	28	64	
Baie Topaze	...	...	...	1	24	7	27	59	
Latanier	...	...	...	—	—	—	2	2	
Trois Soleils	...	...	...	—	—	—	8	8	
Palisade	...	...	...	—	—	—	8	8	
Montagne Goyave	...	...	...	—	—	—	7	7	
Mangues	...	...	...	—	—	—	2	2	
La Ferme	...	...	...	—	—	—	2	2	
Petit Brûlé	...	...	...	—	—	—	3	3	
Montagne Goyave Dairy Farm	...	...	...	—	—	—	8	8	
Pointe Coton Dairy Farm	...	...	...	1	—	—	8	9	
Mangues Dairy Farm	...	...	...	—	—	—	1	1	
Baie Malgache Dairy Farm	...	...	...	—	—	—	16	16	
TOTAL				...	10	122	43	263	438

467. The rearing and breeding records for dairy cows were as follows:

Centre	No. of Calvings	No. of Calves		Bought in from farmers		Deaths			
						Adults		Young	
		M	F	M	F	M	F	M	F
Oyster Bay ...	17	8	9	11	4	—	—	4	2
Le Chou ...	18	6	12	8	1	—	3	2	—
Malabar ...	26	8	18	7	8	—	1	2	1
St. Gabriel ...	24	17	7	4	4	—	1	3	—
Maréchal ...	22	12	10	7	2	—	—	3	3
Baie Topaze ...	17	7	10	1	7	1	1	1	1
Mentagae Goyave ...	—	—	—	—	—	1	—	—	—
TOTAL ...	124	58	66	38	26	2	6	15	7

468. All adult cattle died from what was subsequently diagnosed as red water fever. Towards the end of the year, sick animals with the now familiar symptoms of red water fever were immediately inoculated, as a result no deaths occurred.

469. The number and distribution of pigs were as follows:

Place	Adults		Young		Total
	M	F	M	F	
Oyster Bay ...	2	11	8	8	29
Le Chou ...	1	13	8	17	29
St. Gabriel ...	3	19	14	18	54
Maréchal ...	2	10	8	10	30
Baie Topaze ...	2	12	17	15	46
Latanier ...	—	—	—	1	1
Petit Brulé ...	—	—	—	4	4
La Ferme ...	—	1	3	5	9
Mangues ...	1	2	7	9	19
Trois Soleils ...	—	4	8	5	17
Baie Malgache ...	—	1	—	—	1
	11	73	73	92	249

470. The rearing and breeding records for pigs were as follows:

Place	No. of farrowings	Born		Died or culled			
		M	F	M.A.	F.A.	M.Y.	F.Y.
Oyster Bay ...	16	84	77	—	1	20	17
Le Chou ...	18	92	87	—	—	12	9
St Gabriel ...	26	54	66	—	3	21	25
Maréchal ...	14	43	48	—	1	4	1
Baie Topaze ...	15	51	48	1	4	6	5
Petit Brulé ...	—	—	—	—	—	1	—
Trois Soleils ...	2	8	11	—	—	4	2
La Ferme ...	1	3	5	—	—	—	—
Mangues ...	2	9	9	—	—	—	—
TOTAL ...	94	344	351	2	9	68	59

471. The average size of litter of the herd was 7.4 piglets per farrowing and there was an 82 per cent survival to weaning.

472. The number and distribution of sheep were as follows:

Place	Adults		Young		Total
	M	F	M	F	
Gombrani Island ...	1	6	12	38	57
Crab Island	3	7	2	9	21
	4	13	14	47	78

473. The rearing and breeding records of sheep were as follows:

Place	Births		Deaths			
	Male	Female	M.A.	F.A.	M.Y.	F.Y.
Gombrani Island ...	11	18	—	1	4	1
Crab Island ...	2	5	—	—	—	—
TOTAL ...	13	23	—	1	4	1

LAGOON ISLANDS

474. The 200 Malayan Dwarf coconuts planted on Ile du Chat in 1963 as well as those on Gombrani grew satisfactorily. Further plantings of these coconuts were made on Ilot de Coco and Ilot de Sable, Ilot Plat and Gombrani. The sheep on Gombrani and Ilot Crab thrived. About 15 tons of acacia seeds were harvested off the islands and used for stock feed. It is anticipated that the first crop of coconuts may be expected from Ilot Chat in the coming year from seedlings planted in 1959 from palms in the Port South-East valley, subsequently destroyed by cyclones.

CATTLEWALK

475. The cattle census was as usual taken in March but unfortunately the records were accidentally lost:

Year	Bulls	Bullocks	Cows	Calves	Total
1961	793	260	3,354	1,537	5,444
1962	696	281	2,890	955	4,822
1963	764	234	2,585	978	4,561
1964	—	—	—	—	—

476. After two years of rotational grazing pangola paddocks at Montagne Goyave with 3 days grazing and 33 days rest, it was found that 1 acre carried 1.9 springing heifers. The heifers were fed 2 lbs of concentrate per day and the grass was fertilized with 240 lbs per acre of NPK fertilizer over the year.

XXIV. Lesser Dependencies

477. Four principal groups of islands were concerned, namely Peros of 2,900 acres, Salomon of 2,000 acres, Diego Garcia of 6,000 acres and Agalega of 6,000 acres. The islands produced copra and yields are low.

478. The islands continued to be operated by a Seychelles company. A visit was made in April to Diego Garcia in the Chagos Archipelago, by the Officer-in-charge of the Entomological Division, with a view to determining whether insects liberated for the control of the rhinoceros beetle attacking coconuts had become established and to generally examine the position of this pest in Diego Garcia. It was found that the parasite, *Scolia ruficornis*, had become well established in a restricted area of the island in the vicinity of the settlement. It was determined that these wasps were unable to parasitise the larvae of the rhinoceros beetle in dead logs but were able to do so in manure heaps, which are to be found only in and around the settlement. The predator, *Platyeris laevicollis*, which was liberated in 1963 in Diego Garcia was not recovered and in consequence does not appear to have become established. Little progress can be made in controlling the depredations of the rhinoceros beetle in Diego Garcia until such time as the labour position on the island makes it possible to clean the coconut plantations and destroy all dead logs which serve as breeding places for the beetle.

APPENDICES

A. Staff

(as at 31st December)

Appointment	Name	Remarks
Director of Agriculture	M. D. French-Mullen, D.I.C.T.A., A.I.C.T.A.	
Deputy Directors (2) ...	S. Staub, A.R.C.S.T. (Glas.) A.M.I.Mech.E., Dip. Agric. (Maur.)	Returned from leave on 19.10.64
	A. Darné, F.R.C.V.S., Dip. Agric. (Maur.)	Returned from leave on 30.1.64

ADMINISTRATIVE AND FINANCE DIVISIONS

Chief Finance Officer ...	L. Allier	Appointed in a temporary capacity
Chief Executive Officer	S. W. Toolsy	
In addition there are:	3 Senior Executive Officers	
	6 Executive Officers	
	2 Higher Clerical Officers	
	13 Clerical Officers ...	1 vacancy
	1 Senior Stores Officer	
	1 Assistant Stores Officer	
	2 Stores Assistants	
	1 Confidential Assistant	
	10 Typist/Stenographers	2 vacancies
	1 Librarian	

AGRICULTURAL DIVISION

Appointment	Name	Remarks
Senior Agricultural Officers (3)	B. D. Roy, B.Sc. Agric. (Wales), Dip. Agric. (Maur.)	
	K. Lutchmeenaraidoo B.Sc. Agric. (Read.) (Dip. Agric. (Maur.)	Returned from leave on 7.9.64
	1 vacancy	
Agronomists (4)	L. A. Suzor, Dip. Agric. (Maur.)	
	J. Seeyave, A.I.C.T.A. (Trinidad), Dip. Agric. (Maur.)	
	T. M. Narain, B.Sc. Agric. (Reading)	
	L. R. Brunet, B.Sc. Agric. (Reading)	Appointed 1.7.64
Horticulturist	J. H. Julien Dip. Agric. (Maur.)	
Agricultural Officers (9)	J. Marot	
	I. Fakim, Dip. Agric. (Maur.)	
	M. Sooltangos, Dip. Agric. (Maur.)	
	D. Lalji	
	H. Choolun, Dip. Agric. (Maur.)	
	S. Bagwant	Returned from leave on 4.12.64
	D. Reetoo	
	B. Nundloll	Appointed on 1.7.64
	S. Y. E. Doomun	Appointed on 1.12.64

In addition there are:

17 Assistant Agricultural Officers	3 vacancies
1 Surveyor	
1 Assistant Surveyor	
18 Overseers	
3 Agricultural Assistants	

AGRICULTURAL CHEMISTRY DIVISION

Appointment	Name	Remarks
Chemist ...	S. Belcourt, B.Sc. (Wales), Dip Agric (Maur.)	
Assistant Chemist ...	J. Pablôt	... Went on leave on 21.9.64

In addition there are:

3 Scientific Assistants

PLANT PATHOLOGY DIVISION

Plant Pathologist ...	L. Orieux, B.Sc. (Lond.) D.I.C.	
Assistant Plant Pathologist	S. Félix, Dip. Agric. (Maur.)	

In addition there are:

4 Quarantine Inspectors

1 Scientific Assistant

CONTROL BOARD DIVISION

Registrar ...	P. J. Galea, Dip. Agric. (Maur.)	
Assistant Registrar and Chief Chemist	Vacant	
Accountant ...	J. G. Gnany, A.A., C.C.A.	
Senior Assistant Chemist	I. D. Nawoor, B.Sc. (Hons.) Chemistry (Wales)	
Assistant Chemist ...	R. Thélemaque, Dip. Agric. (Maur.)	

In addition there are:

1 Investigational Officer
and Weighbridge
Inspector

3 Senior Test Chemists ... 1 went on study
leave on 17.1.64

18 Test Chemists ... 1 vacancy

7 Test Chemists ... Employed during
crop only

25 Samplers ... Employed during
crop only

AGRICULTURAL COLLEGE DIVISION

Appointment	Name	Remarks
Principal	E. Limfat, M.Sc., M.A.S.A.E. A.M.I. AGR.E., B.Sc., A.C.G.I., A.M.I., Chem. E.	Returned from leave on 3.10.64
Lecturers (4)	R. Latulipe, B.Sc. (Lond.) R. Burrenchobay, B.Sc. (Edin.) S. Moutia, B.Sc. (Hort.), Dip. Agric. Econ. (Oxon), Dip. Agric. (Maur.), F.R.H.S.	On study leave. J. Seeyave acting
	1 Vacancy	Temporarily filled by R. Julien
Assistant Lecturers and Laboratory Demonstra- tors (4)	P. Guerandel, Dip. Agric. (Maur.) F. G. Carver, Dip. Agric. (Maur.) S. Boojedhur, Dip. Agric. (Maur.) 1 Vacancy	

ENGINEERING DIVISION

Agricultural Engineer	Vacant	M. Morad acting
Assistant Agricultural Engineer	M. Morad Dip. Agric. (Maur.)	

In addition there are:

1 Scientific Assistant ...	On study leave
1 Supervisor, Livestock Feed Factory	
1 Accounts Clerk	
1 Temporary Clerk, Extension Shop	

ENTOMOLOGICAL DIVISION

Entomologist	J. E. A. Orian, B.Sc., F.R.E.S., F.Z.S., Dip. Agric. (Maur.), A.C.R.	On study leave
Assistant Entomologist	J. Monty Dip. Agric. (Maur.)	Acting as Officer-in- charge, Entomo- logy Division

In addition there is:

1 Scientific Assistant ...	On study leave J. Fon Sing (Temporary)
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DIVISION OF VETERINARY SERVICES

Appointment	Name	Remarks
Senior Veterinary Officer	J. U. D. Shuja, M.R.C.V.S.	
Veterinary Officers (2) ...	D. Koerner, Dr. Med. Vet. (Hanover)	On contract
	D. A. MacPherson, B.Sc., M.R.C.V.S.	On contract; assumed duty on 24.11.64
Animal Husbandry Officer	J. A. C. Delaitre, B.Agr. (N.Z.) Animal Husb- dry	
Laboratory Technologist	Vacant	F. Nadeau acting
Senior Stock Inspec- tors (2)	H. J. Avic R. Pascal	
Agricultural Officers (2)	Clifford Gassin, N.D.P.H. Amand Ferrière	

In addition there are:

2 Scientific Assistants ...	1 vacancy
9 Stock Inspectors ...	4 vacancies
21 Livestock Assistants ...	1 vacancy
3 Agricultural Assistants	

TEA DIVISION

Senior Agricultural Offi- cer	D. N. Andrews	On contract
Agronomist	L. Moorlee, Dip. Agric. (Maur.)	Went on leave on 2.12.64
Agricultural Officers (2)	C. S. Amide, Dip Agric. (Maur.)	Appointed on 1.7.64
	1 Vacancy	

In addition there are:

5 Assistant Agricultural Officers	2 vacancies
7 Overseers	(1 permanently seconded to Mid- lands Tea Estate, N.E.T.E.Co.) 2 vacancies
1 Agricultural Assistant	

FISHERIES DIVISION

Fisheries Officer ...	Vacant	J. Momplé acting
Chief Inspector ...	J. Momplé	

In addition there are:

3 Inspectors	
3 Sub-Inspectors	
16 Head Guards	
36 Guards	1 vacancy

RODRIGUES DIVISION

Appointment	Name	Remarks
Senior Agricultural Officer	P. L. Hotchin, O.B.E., B.Sc. Agr. (Leeds), D.T.A. (Trinidad)	Returned from leave on 14.9.64

Agricultural Officer ... E. Farla

In addition there are:

2 Assistant Agricultural Officers	2 vacancies
10 Overseers	
1 Executive Officer	
1 Stores Assistant	
4 Clerical Assistants	

B. Composition of the Principal Boards and Committees**(i) BOARD OF AGRICULTURE, FISHERIES AND NATURAL RESOURCES***Ex-Officio Members*

The Director of Agriculture—*Chairman*

The Conservator of Forests—*Vice-Chairman*

A Deputy Financial Secretary

Members of the Legislative Assembly

Dr. the Honourable L. R. Chaperon

The Honourable R. Rey

The Honourable V. Govinden, M.B.E.

The Honourable H. R. Khan

Representatives of Millers

Mr. Robert Doger de Spéville

Dr. P. O. Wiéhé, C.B.E.

Representatives of Planters

Mr. G. Rouillard

Mr. Hassam Nazroo

Representative of the Chamber of Agriculture

Mr. L. H. Garthwaite

There were 2 meetings of the Board during the year.

(ii) AGRICULTURAL COLLEGE ADVISORY BOARD

The Director of Agriculture—*Chairman*

Nominated by His Excellency the Governor

The Honourable R. Balgobin

Mrs. B. Jhowry

Dr. P. O. Wiéhé, C.B.E.

Nominated by the Chamber of Agriculture

Sir André Nairac, Kt., C.B.E., Q.C.

Mr. Serge Dupont de Rivaltz de St. Antoine

Nominated by the Société de Technologie Agricole et Sucrière

Mr P. de Sornay, Officier de la Legion d'Honneur

Mr. Auguste Harel

Nominated by the Association of Former Agricultural Students

Mr. René Noël

The Board held 4 meetings during the year.

(iii) CONTROL BOARD

Mr. Magistrate S. Mootoosamy—*Chairman*

Representatives of Millers

Mr. Robert de Spéville (January to May)

Mr. Ernest Bouvet (May to December)

Mr. Francis North Coombes

Representatives of Large Planters

Mr. Roland Ducler des Rauches

Mr. Baalkrishna Ramphul

Representatives of Small Planters

Mr. Nurkeesor Saddul

Mr. Jagdeosing Chundunsing

The Board held 35 meetings during the year.

(iv) TOBACCO BOARD

Ex-Officio Members

The Director of Agriculture or any officer of his Department deputed by him—*Chairman*

The Commissioner of Excise—*Vice Chairman*.

The Accountant General or any officer of his Department deputed by him

The Manager, Tobacco Warehouse

Appointed by His Excellency the Governor on the advice of the Minister

The General Manager of the British American Tobacco Co. (Mauritius) Ltd., or his representative

The Managing Director of the Amalgamated Tobacco Corporation (Mauritius) Ltd., or his representative

Mr. A. G. Rey

Mr. P. Jheelan

Mr. R. Ducler des Rauches

Mr. A. Purgass

The Board held 12 meetings during the year.

(v) LAND SETTLEMENT ADVISORY COMMITTEE

The Director of Agriculture or his representative—*Chairman*

The Senior Agricultural Officer (Extension)

The Registrar of Co-operative Societies

The Civil Commissioner (North)

The Civil Commissioner (South)

The Civil Commissioner (Moka—Flacq)

The Civil Commissioner (Plaines Wilhems/Black River)

The Honourable Vele Govinden, M.B.E.

Mr. Hassam Nazroo

Mr. Hurruck Hoolsy

The Committee held 1 meeting during the year.

(vi) TEA CONTROL BOARD

Ex-Officio Members

The Director of Agriculture—*Chairman*

The Deputy Financial Secretary (Economics)

Members appointed by His Excellency the Governor

Mr. P. Boullé

Mr. J. Pilot

Mr. L. Ramdin

Mr. A. H. Maderbocus

Mr. B. Ramsahye

The Honourable V. Govinden, M.B.E.

The Honourable Y. Ramjan

Mr. Francis North Coombes

The Board held 12 meetings during the year.

(vii) SUGAR PLANTERS' REHABILITATION FUND COMMITTEE

Ex-Officio Members

The Director of Agriculture—*Chairman*

The Registrar of Co-operative Societies

Members appointed by His Excellency the Governor

Mr. C. Dwarkasingh

Mr. J. Lagesse

Mr. S. Butan

Mr. J. Roodurmun

Mr. G. Rouillard

The Committee held 14 meetings during the year.

C. Legislation

Ordinance No. 4 of 1964	... The Fisheries (Amendment) Ordinance, 1964
Ordinance No. 18 of 1964	... The Sale of Canes (Control) Ordinance, 1964
Ordinance No. 34 of 1964	... The Sugar Industry Reserve Funds (Amendment) Ordinance, 1964
Ordinance No. 48 of 1964	... The Sale of Canes (Control) (Amendment) Ordinance, 1964
Proclamation No. 2 of 1964	... To fix the day of the coming into force of the Mauritius Agricultural Marketing Ordinance, 1963
Proclamation No. 16 of 1964	... To proclaim the rate of the duty leviable under the Sale of Canes (Control) Ordinance, 1964, on the sugars of the 1963 crop exported from Mauritius.
Proclamation No. 19 of 1964	... To authorise the use of large nets for fishing during the period extending from the 1st October, 1964 to the 31st January, 1965.
Proclamation No. 22 of 1964	... To provide for the control of a sugar cane disease.
Govt. Notice No. 22 of 1964	... The Rodrigues Fisheries (Amendment) Regulations, 1964.
Govt. Notice No. 23 of 1964	... The Slaughter of Cattle (Amendment) Order, 1964.
Govt. Notice No. 40 of 1964	... The Slaughter of Cattle (Amendment No. 2) Order, 1964.
Govt. Notice No. 61 of 1964	... The Tea Industry Control (Amendment) Regulations, 1964.
Govt. Notice No. 82 of 1964	... The Civil Establishment (General) (Amendment No. 7) Order, 1964.
Govt. Notice No. 88 of 1964	... The Tea Industry Control (Amendment No. 2) Regulations, 1964.
Govt. Notice No. 101 of 1964	... The Mauritius Agricultural Marketing (Forms and Records) Regulations, 1964.
Govt. Notice No. 102 of 1964	... The Controlled Products Order, 1964.

Govt. Notice No. 129 of 1964	...	The Mauritius Agricultural Marketing (Prices) Order, 1964.
Govt. Notice No. 130 of 1964	...	The Mauritius Agricultural Marketing (Cess) Regulations, 1964.
Govt. Notice No. 131 of 1964	...	The Mauritius Agricultural Marketing (Grading and Classification) Regulations, 1964.
Govt. Notice No. 137 of 1964	...	The Sale of Canes (Control) Regulations, 1964.
Govt. Notice No. 161 of 1964	...	The Civil Establishment (General) (Amendment No. 59) Order, 1964.

D. List of Publications and Contributions to Literature by Officers of the Department of Agriculture during 1964

<i>Name of Author</i>	<i>Title of Paper</i>	<i>Name, Volume, No. Page Nos. of periodical in which published</i>
MOUTIA, S. ...	Notes on <i>Magnolia grandiflora</i> L. and its propagation	Revue Agricol et Sucrière de l'Ile Maurice, Vol. 43, No. 2, pp. 135-136
FFRENCH-MULLEN, M.D.	Agricultural teaching in Mauritius in relation to sugar-cane	Revue Agricol et Sucrière de l'Ile Maurice Vol. 43, No. 3, pp. 316-320
STAUB, S. ...	Cane payment in Mauritius	Revue Agricol et Sucrière de l'Ile Maurice, Vol. 43, No. 3, pp. 321-331
ORIEUX, L. and LALLMAHOMED, G.	A disease of custard squash (patissons) new to Mauritius	Revue Agricol et Sucrière de l'Ile Maurice, Vol. 43, No. 4, pp. 377-381

E. Richelieu Livestock Feed Factory

STATEMENT OF REVENUE AND EXPENDITURE FOR THE YEAR ENDED 30TH JUNE, 1964

EXPENDITURE	Rs		Rs	
	Rs	C	Rs	C
Stock of Materials on 1.7.63 :—				
Raw Materials	473,165.91	...	...	...
Manufactured Feeds	18,884.70	...	...	...
Aloe Bags	20,100.00	...	...	...
Raw Materials received in 1962-63 but paid in 1963-64 :	512,150.61	...	...	...
Fish Meal	...	...	2,745.00	...
Purchase of Raw Materials and Bags in 1963-64 :	509,405.61	...	...	...
Meat Meal	89,173.33	...	...	...
Fish Meal	72,762.88	...	...	...
Peas and Beans	2,730.90	...	...	...
Lucerne	115,748.71	...	...	...
Vitamins	25,313.16	...	...	...
Antibiotics	9,508.91	...	...	...
Bone Meal	12,132.00	...	...	...
Colonial Salt	3,174.40	...	...	...
Oats	76,596.59	...	...	...
Groundnut Cakes	194,163.52	...	...	...
Molasses	70,819.77	...	...	...
Pollard	121,397.15	...	...	...
Maize	654,039.85	...	...	...
Wheat Bran	154,018.40	...	...	...
Scums	1,863.00	...	...	...
Milk Powder	538.50	...	...	...
Cotton seed cakes	97,088.67	...	...	...
Cod Liver Oil	47,473.05	...	...	...
Wheaten Flour	1,200.00	...	...	...
Baled Bagasse	259.16	...	...	...
Aloe Bags	71,350.00	...	...	...
Diesel Oil	5,499.90	...	...	...
Raw Materials received in 1963-64 but paid in 1964-65 :	1,826,851.85	...	...	...
Fish Meal	...	...	51,040.04	...
Other expenses :				
Wages	103,143.48	...	...	...
Transport	1,230.08	...	...	...
Office Expenses	115.60	...	...	...
Electricity	11,200.75	...	...	...
Insurance	1,429.05	...	...	...
Maintenance of Machinery and Lorry	12,573.40	...	...	...
Rent of Extension Shop	2,400.00	...	...	...
	132,092.36	...	...	...
	2,519,398.86	...	...	...

REVENUE	Rs		Rs	
	Rs	C	Rs	C
Sale of Feeds	...	...	...	...
Stock of Materials on 30.6.1964 :	...	...	...	...
Raw Materials	...	...	660,643.84	...
Manufactured Feeds	...	...	15,697.30	...
Aloe Bags	...	...	4,722.05	...
Excess of Expenditure over Revenue :	...	...	681,063.19	...
	...	...	131,005.43	...

2,519,398.86

F. Conversion Table

1 Arpent	...	...	...	1,043	acres
1 Gaulette		...	...	10.61	feet
1 Metric Ton		...	...	1,000	kilos
1 Long Ton		...	...	1,016	kilos
1 Pound avoirdupois			...	454	grams
1 Kilo	...	...	...	1,000	grams
1 Hundredweight			...	50.803	kilos
1 Cord	...	...	...	92.82	cubic feet
1 Imperial gallon			...	4.54	litres
1 Rupee	...	...	...	1/6	Sterling

G. Livestock Census, 1964

District	Fowls						Ducks		Geese		Turkeys		Guinea fowls	Pigeons	Bee hives		
	Under 6 months			Over 6 months													
	Pure Bred		Local and Crossbred	Pure Bred		Local and Crossbred											
	M	F	M	F	M	F	M	F									
R. du Rempart ...	104	617	2,273	8,640	510	2,073	846	24,740	137	1,034	19	88	36	105	455	3,368	26
Plaines Wilhems ...	3,609	7,027	4,823	14,500	8,152	23,892	13,441	47,598	3,219	7,118	372	456	149	401	469	8,426	3
Pamplemousses ...	92	110	2,137	5,805	125	1,030	2,207	13,119	122	482	5	21	9	19	43	1,566	2
Flacq ...	161	466	3,842	13,160	367	1,981	4,963	5,217	272	1,823	6	80	24	195	323	4,370	20
Grand Port ...	118	395	2,166	10,405	171	771	5,222	22,520	362	2,466	56	107	39	45	247	3,645	4
Moka ...	40	227	999	5,702	76	582	3,401	15,237	137	969	7	19	1	8	208	1,395	—
Black River ...	118	338	2,151	4,833	168	1,429	1,367	6,667	204	629	3	54	52	125	168	1,534	—
Savanne ...	91	1,124	2,484	6,614	256	2,611	2,734	15,931	238	2,802	4	229	18	48	257	3,108	5
Port Louis ...	238	647	4,831	8,130	1,141	4,321	4,594	15,599	917	2,421	77	203	103	167	236	6,205	10
TOTAL	4,571	10,951	36,657	77,869	10,966	38,690	38,775	166,628	5,608	19,744	545	1,257	431	1,113	2,406	33,617	70
Fowls ...	...	...	385,107														
Ducks ...	...	...	25,352														
Geese ...	...	...	1,802														
Turkeys ...	...	...	1,544														
Guinea Fowls ...	...	...	2,406														
Pigeons ...	...	...	33,617														
Beehives ...	...	...	70														
TOTAL	...	...	449,898														

I. Livestock Census, 1964

[illegible]

J. Livestock, Census 1964

<i>Rabbits</i>		<i>Horses</i>		<i>Mules</i>		<i>Donkeys</i>		<i>Dogs</i>	<i>Cats</i>
<i>Under 1 year</i>	<i>Over 1 year</i>	<i>Under 1 year</i>	<i>Over 1 year</i>	<i>Under 1 year</i>	<i>Over 1 year</i>	<i>Under 1 year</i>	<i>Over 1 year</i>		
403	691	2	—	—	—	—	—	8,585	3,747
177	814	—	6	—	—	—	6	5,939	2,195
110	225	2	—	2	—	7	5	6,135	2,399
243	342	3	3	11	—	—	2	4,200	1,190
139	294	3	—	—	4	8	15	7,209	4,670
149	500	9	—	—	—	—	—	4,069	1,987
111	512	10	4	—	—	1	—	7,019	2,837
2,238	1,868	35	29	—	—	3	4	19,043	10,474
158	785	37	8	1	2	7	2	7,069	2,666
3,728	6,031	101	50	14	6	26	34	69,268	32,165

